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Principles and Method of Teaching

DERIVED FROM A KNOWLEDGE OF THE MIND

By JOHN W. DICKINSON

BOSTON, MASS.:
EMERSON COLLEGE OF ORATORY
1898

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INTRODUCTION.

Some definite knowledge of the modes and occasions of mental activity is now considered to be necessary to the intelligent pursuit of any branch of scientific learning. Such knowledge is especially essential to the pursuit of those branches that relate to man as an individual or as a member of human society. From the nature of the case, a knowledge of the mind is the only source from which are to be derived the principles and method of teaching and study, that have education for the end to be attained.

As a knowledge of the human mind is of signal importance to all who have anything to do with its education, it may be well at first to inquire for the best means of obtaining the knowledge.

Most modern writers on psychology and pedagogy treat these subjects in a manner too profound for easy comprehension by the average

learner, or too elaborate for the communication of definite and practical information.

In this way they often excite in the learner's mind a consciousness of his inability to comprehend the subject of his study, or a feeling of disappointment and doubt concerning its utility.

The young student of mental science is always in danger of being confused when he finds a want of agreement among those of his teachers who have given the subject a thoughtful and critical examination..

A serious mistake is made whenever the young pupil is introduced to the study of mental phenomena by elaborate discussions of the various opinions which different philosophers have formed, rather than by turning his mind directly upon its own activities for a knowledge of their nature and their occasions.

The subject becomes still more complicated in the mind of the learner if he is required to approach it through an investigation of the phenomena of his physical constitution. This is especially true if he finds it impossible to observe the phenomena for himself. If the body is one thing, and the mind in its nature is a radically

different thing, he cannot readily see how an analysis of the one, even if intelligently made, can discover the attributes of the other; and when he finds the opinion prevailing in many minds, that the philosophers of the past, from Thales until quite recent times, have all failed in their efforts to discover the facts relating to mental phenomena, or even to find the true method of investigation, he is inclined to turn away from the hopeless task of attempting to discover anything for himself that is either useful or true.

Another difficulty presents itself in the poverty of language found in its want of adaptation to represent mental states, or to express by the same words the same ideas to different minds.

These discouraging conditions, that in the mind of the inexperienced person seem to remove the comprehension of mental science beyond his capacities, would be quietly disposed of in a good degree if he could be introduced to the subject by an elementary course of investigation through which he might be made conscious of simple facts relating to his own mental operations, before attempting to comprehend the philosophy of their existence, or to find the truth

by an examination of the conflicting opinions of other minds.

If the mind of the learner can be directed at first to itself as the only true source of a knowledge of itself, then it will not be distracted by contending opinions, nor discouraged by vain attempts to gain a knowledge through observation of that which must be known primarily through consciousness.

By first knowing ourselves and the natural modes of expressing ourselves we shall learn how to interpret the expressions made by other minds, and with the conviction that we represent, in the constitution of our nature and in the formation of our habits, the whole class of beings to which we belong, we may infer from consciousness and observation what are the essential attributes of all individuals belonging to the class.

In the indirect study of other minds our observations made on their external manifestations will mean nothing only so far as they correspond to our own experiences. For this reason it is quite unsafe, in the treatment of the young, to follow a plan of instruction formed from obser-

vations made on them by those who are not familiar with themselves. Unless we retain a consciousness of the different stages of our mental growth from childhood to maturity, unless we are conscious of ourselves as existing in a state which is the result of all the experiences of the past, and unless we have become philosophers, we shall have no adequate power of interpreting the human phenomena that present themselves for our observations, nor can we make out a plan of human education worthy of acceptance.

The elementary course of mental study recommended should be pretty closely confined to facts which are the direct objects of consciousness.

The knowledge thus acquired will be a preparation for an intelligent study in due time of the relations which our mental states bear to the physical conditions through which they are occasioned, and for some trustworthy inferences of what is universally true of other minds.

The tendency, that now exists, to treat the mind as a material thing, and its various activities as the simple products of physical forces, will be corrected if the student is introduced

directly through consciousness to a study of the facts of his mental states as they appear in themselves. After these facts are known as the facts of consciousness the coexistent movements in the nervous organism may be known as the facts of observation. The two kinds of facts may then be compared and their relations determined. The nature of the facts will indicate that the one kind is the product of the exercise of mental power, the other of physical force, and that a knowledge of one is in no sense a knowledge of the other.

The attributes of the mind are to be known through a consciousness of mental states produced, and in no other way can the slightest hint of their existence or of the nature of their activity be obtained. Great care should be taken in the pursuit of a knowledge of mental phenomena that the true object of such knowledge be presented for study. Nothing can prove more fatal to the value and validity of any kind of knowledge than a mistake in the selection of its objects.

Principles and Method of Teaching Derived from a Knowledge of the Mind.

CHAPTER I.

THE DEFINITION OF MAN.

THE analytic method of study requires, as a condition of knowledge, that the object or subject to be known shall be presented to the learner's mind first as a unit. The presence of a whole is necessary that parts and qualities may be known as parts and qualities. As man is both the object and subject of education, he must be presented just as he is constituted, to whoever is in pursuit of a knowledge of the principles of education, that the principles may be discovered.

This suggests the necessity of deriving a definition of man.

If we move an object from one place to an-

other place, we become conscious of producing change in a thing.

If we think of this change and then of ourselves as producing it, we become conscious of producing a change in our states of mind.

A consciousness of producing changes in things or in mental states leads us to infer the existence of that which produces the changes, and we call it power.

POWER.

Power may be defined as that which produces changes of any kind.

The existence of changes will now become the sign of the existence of power, and the kind of changes observed, and the extent of them will determine the kind and extent of the power inferred.

From the kind of changes we can produce, we shall infer the existence in ourselves of both physical and mental power.

From the unlimited extent of the changes produced in the world around us, and from the limited changes we are conscious of being able to produce, we infer the existence of both infinite and finite power.

DEFINITION.

The being that is conscious of possessing finite, mental, and physical power is man.

We may infer that all changes are produced by power exerted by some being, and that mental power differs in kind from physical power only in its objects; the one producing changes that terminate in mental states, the other in producing changes that terminate in the altered relations of physical things.

The human body is the instrument that man uses in the changes he produces in external objects, and the medium through which he gains a knowledge of these objects, and of his own relations to them.

A complete knowledge of man, therefore, includes a knowledge of his mind and of his physical body, in so far as it holds a relation to the phenomena of his mind. But the study of the human body, as related to the human mind, must be preceded by a study of the mind itself; for a knowledge of a thing as an instrument or a medium implies preexisting knowledge of that which constitutes the thing, either an instrument or a medium.

All we can know of our mental states must be known through consciousness.

All we can know directly of our material bodies must be derived from observation.

What we know of the relation the one holds to the other must be obtained by inferring that the mental phenomena of which we are conscious are in some way occasioned, directly or indirectly, by the physical phenomena we observe.

How a particular movement in the nervous system can be the occasion of a particular mental act is beyond the limit of human thought to discover.

Being first conscious of a mental state, and knowing at the same time of the coexistent state of the nervous organism, if the coexistence is constant, we may reasonably infer that they hold some relation to each other; but even then all we can know of the mental state itself must be through consciousness.

In studying the mind for a knowledge of the principles or laws that control it in its various activities, and in the development of its power, we must make its phenomena the direct object of consciousness. The knowledge thus obtained

will prepare the student to make in his future study of the mind a more intelligent examination of the material circumstances which seem to exist simply as occasions of mental states.

This order of study will establish firmly in the learner's mind the idea that the brain is only an instrument to be used, and not in any sense the cause of mental effects.

CHAPTER II.

PSYCHOLOGY DEFINED.

WHEN we think of an object, as a plant, or of a subject, as arithmetic, we know that we can *think*.

Our thoughts may occasion feelings of pleasure or of pain, and we know that we can *feel*.

We may choose to possess that which occasions feelings of pleasure, or to reject that which occasions feelings of pain, and we shall know that we can choose.

MIND.

That which thinks, feels, and chooses is the *mind*.

MENTAL STATES.

Thinking, feeling, and choosing are mental states.

PHENOMENA.

If we think of external objects that happen to

be in our presence, their properties will appear to our minds.

If we turn our attention to the operations of our minds, mental states will appear.

Anything that appears to the mind as it thinks is a phenomenon — plural number phenomena.

Phenomena are of two kinds: properties of physical objects — physical phenomena — states of mind — mental phenomena.

KNOWLEDGE.

If we compare our idea of the color of a red rose with our familiar idea of red color, we shall be conscious of the agreement of the two ideas, and we shall know that the rose has a red color.

If we compare our idea of the color of the rose with our familiar idea of green color, we shall be conscious of the disagreement of the two ideas, and we shall know that the rose has not a green color.

A consciousness of the agreement or of the disagreement of ideas is knowledge.

OBJECT OF KNOWLEDGE.

An object of knowledge is that of which we are at any time knowing.

Definitions have been derived of

Mind,
Phenomena,
Object,
Knowledge.

DEFINITION.

Psychology is that knowledge which has for its object the phenomena of the human mind.

The objects of our knowledge as we study for the principles of education are the phenomena of the human mind, which include thinking, feeling, choosing, their relations to one another as activities, and the conditions which determine the results of the exercise of mental power.

The student must be careful to perceive that the mind by its definition is a unit, and so not in any sense to be thought of as composed of parts.

There are different modes of mental activity, and they may be distinguished as different modes, but through consciousness we are made aware that the cause of these modes is one and the same in all cases. As the mind itself is the one cause, it will receive different names as its modes of activity are perceived to differ.

INTELLECT.

The mind considered to be the power that produces thinking is called the intellect.

SENSIBILITY.

The mind feeling pleasure or pain is the sensibility.

WILL.

The mind choosing or producing volitions is the will.

Before entering upon the study of the mind as an intellect it will be necessary to illustrate and define some terms to be used, that they may be used in the same sense by both teacher and pupil.

TERMS DEFINED.

1. *Power.*— Power has already been defined to be that which produces changes of any kind.

Power that produces changes in mental states may be named mental power, or simply power.

Power that produces changes in physical objects may be called physical power, or force.

a. Active Power.—When an object of thought, as a plant, is presented to the mind as an occa-

sion for the exertion of its power of thinking, the mind is conscious of self-activity in originating and producing its own thoughts.

A power that is active in originating and producing mental states is an active power.

Active power is always in exercise when the direct objects of its activity are in its presence as occasions.

b. Passive Power.— A mind may be active in receiving effects through the medium of some form of description of objects that have never been in its presence. A power that is active simply in receiving effects is a passive power.

In the exercise of its passive power the mind is conscious of being under the influence of some other mind, both in the origin and mode of its activity.

The term "passive power," as may be seen from the illustration and definition, is not used to express inactivity, but to indicate that power may be active in receiving effects as well as in originating and controlling them.

The occasions for the exercise of active power are the presence of objects of knowledge.

The occasions for the exercise of passive power are some forms of description of objects.

Books, lectures, and verbal explanations address the passive powers, and they not unfrequently fail to communicate even information of the subjects which they attempt to bring before the mind.

Words are no more than signs of ideas, and words have no significance until the thing signified is already known.

The character of mere verbal instruction may be clearly seen in its results.

It leaves the student at the close of his school life unacquainted with things.

It sends him out into life without a method of studying things, and without the independent power of directing his own mental activity, when his wellbeing requires him to think and act for himself.

The intelligent teacher requires his pupils to obtain their knowledge by a direct study of the objects and subjects of that knowledge, and to acquire facility in the use of their minds by a methodical use of their active powers.

FACULTY AND CAPACITY.

An active power may be called a faculty, from the Latin *facĕre*, to act.

A passive power may receive the name capacity, from the word *capĕre*, to receive.

If the faculties are well cultivated the capacities will take care of themselves.

PREDISPOSITION.

Some minds exhibit an inclination to think such thoughts as occasion emotions of pain rather than of pleasure.

To such minds a cloudless sky is a sure sign of an approaching storm, and the present age is a degenerate one in its institutions, and in the intellectual as well as moral character of its inhabitants.

We meet with other minds, in our experiences, that are naturally inclined to think such thoughts as prepare their minds for favorable judgments and for emotions of pleasure.

That original condition of the mind which inclines it to think so as to produce thoughts that occasion one kind of emotions rather than another is predisposition.

While this characteristic of the mind is an inherited gift, it may be modified in its relations to mental states by early training, by association, and by the successes and failures of life.

The right cultivation of the mind with reference to its inclinations is important.

The successful pursuit of truth, the healthful influence of a good example, and personal happiness depend in no small degree on the spirit by which our mental activity is animated.

HABIT.

By the frequent repetition of any form of mental activity the mind acquires a facility in exerting its energy in that form. As the mind acquires facility in any mode of activity, it also acquires an inclination to continue to act in that mode.

The facility the mind acquires in exerting its power, by exerting it, accompanied with an inclination to continue the exercise, constitutes habit.

The capacity of forming habits renders mental development possible. Habits are the inevitable results of mental activity, and they begin to form

as soon as the activity begins. It is for this reason that right early training is necessary to the formation of a good character.

Good physical habits result from the intelligent and faithful care the mind may take of the health of the body.

Correct intellectual habits are formed by the vigorous exercise of the intellect upon appropriate objects of knowledge in accordance with the true method of exerting its power.

Good moral habits are produced by thinking with a desire of discovering the truth, and by a persistent and conscientious practise in choosing the best ends.

The young are trained into good habits by the right exercise of their own faculties; but the occasions of the exercise must be presented in good examples and correct precepts.

LAW.

It is said that the primitive cell of a plant and of an animal cannot be distinguished from each other, and yet we know that when the plant cell develops it will develop into a plant, and when the animal cell develops it will develop into an animal.

Power producing changes in matter has been called force. The forces in the two cells, considered simply as developing agents, are alike, but thought of as producing two kinds of development are different. So, generally considered simply as producing changes, force is the same object of thought wherever its products appear to the mind; but as the products differ among themselves, we infer that force acts in different ways in producing them. At the same time we observe that it always acts in the same way in producing the same kind of changes.

For these reasons we speak of forces in nature, and we infer that there are as many different kinds of forces as there are different kinds of existences produced. Now, as any particular force always produces the same kind of existence, there must be an element in every kind of force that differs from any element in any other kind.

We may then infer that while it is force in all cases which produces a physical existence, there must be an element in every force that directs it and determines the kind of existence produced.

That element in a force which determines the kind of existence produced is the law of the force that controls it in its operations.

Power has been defined to be that which produces changes in our mental states. Taken in this sense it is a unit, and is simply power; but as there are different kinds of mental states, we infer that mental power acts in different modes, and we speak of mental powers.

The activity of the mind considered as an intellect is always thinking; as a sensibility, always feeling; as a will, always choosing.

As these activities differ from one another, there must be an element in each of the powers producing them that differs from any element in either of the other two.

This element is the law that directs and controls the mind in the exercise of its different powers.

Law may then be defined as that element of a force that determines the kind of existence produced, or that element of a power which determines the kind of activity exerted.

Law as thus defined is always to be found in force and in power, and is that which controls their operations.

Physical laws are to be discovered by observing changes in things. Mental laws are to be known through a consciousness of what is going on in our minds.

RULE.

When an object or subject of thought is presented to our minds we must think of it first as a whole. In this statement we have a prescribed mode of thinking.

A noun or pronoun which is the subject of a finite verb must be constructed in the nominative case. This statement is a prescribed mode of constructing the subject of a verbal sentence. These examples illustrate a prescribed mode of thinking and acting.

A prescribed mode of conduct is a rule.

What are called civil and moral laws are rules. Laws have been found to be the controlling elements in physical forces and mental powers. They are to be thought of, therefore, as belonging to the constitution of forces and powers and never as the objects of human creation.

The ability to form wise rules implies a knowl-

edge of the laws to be observed. Evil results must follow the application of arbitrary rules.

CONSCIOUSNESS.

The mind is so constituted that whenever it acts by thinking, feeling, or choosing it not only knows of these states, but it also knows of itself as the agent which produces them.

That attribute of the mind which enables it to know of its own mental states, and of itself as the cause of them, is consciousness.

Consciousness is not to be considered as a distinct power or as a distinct activity, but simply as an attribute of the mind manifesting itself in every mental exercise.

As consciousness is an attribute of the mind, the mind cannot exercise itself without including in its activity the element which consciousness is adapted to contribute; therefore, to say that we are conscious of thinking is simply to say that we think, and to say that we are not conscious of feeling is equivalent to saying that we do not feel.

We may have mental power of which we are unconscious until it is exercised, but the exer-

cise is impossible without a consciousness of its existence, and of the personal being by whom it is performed.

Our thoughts exist nowhere when they do not exist in consciousness.

To say we retain knowledge of which we have once been conscious means no more than to say we can reproduce it when the right occasions are present.

It is the duty of the teacher to present occasions for the knowledge he would have his pupils possess, and for the activity he would have them perform, and to teach by a method that will render possible the reproduction of knowledge once obtained.

ATTENTION.

The mind may think of an object for an instant or for a longer time.

One difference in the two states is found in their duration.

By prolonging it, the latter state is a modification of the former.

A state of mind or a modification of a state of mind caused by prolonging that state is attention.

The power of prolonging our mental states is one of the conditions of knowledge, and of that training of the faculties which is necessary to the acquisition of knowledge. Attention is one of the conditions upon which the activity of memory depends.

When the young begin a systematic course of study at school, they find it difficult if not impossible to prolong any one state of mind, or to produce that state called attention.

A multitude of objects present themselves to their minds, and prevent any continuous thinking of any one of them. At this time they are unable to think of qualities of objects abstracted from the objects to which they belong.

They therefore require the presence of objects themselves as occasions of the concrete knowledge their minds are able to comprehend. They require, also, the presence of the living teacher, whose will must control their minds until they are able to control themselves.

If the young pupil is required to reproduce in recitation what has been taught to the class, and what he has learned by study, he will be likely to hold his attention to the teaching as it

is presented, and to the subject of the lesson as he studies.

The length of lessons to be learned and of recitations to be conducted should be adapted to the ability of the class as a whole to hold their minds to one subject of thought, and to one exercise in reproducing the knowledge acquired.

All attempts at mental labor after the mind has become too weary for attention serve to confuse the knowledge gained and weaken the power of self-control.

IDEA.

As a condition of thinking color of an object, the mind must first be conscious of color itself. Color in this case is the immediate object of consciousness. When we think any quality of an external object, or any attribute of the mind, the immediate object of our consciousness is the quality or the attribute.

The immediate object of our consciousness when we think is an idea.

Ideas may be distinguished from other mental states by either one of two marks. First, they are always the immediate objects of our

consciousness when we think. Second, they are named by the single words in our language.

The occasion of ideas in the mind is the presence of their proper objects.

All teaching and study for new ideas must be literally objective in their character. The mind is so constituted that the conditions of its activity require the presence of whatever is to be known as occasions of first ideas of either objects or subjects of knowledge. After the ideas have been once formed, language may be employed as the means of their reproduction.

THOUGHT.

Suppose the mind by experience has become familiar with the idea of green color, so that it may be called a well-known idea; if a green leaf is now presented and the idea of its color is formed, the mind can compare the new idea with the well-known idea and find that two ideas agree with each other.

An act of comparison of ideas is a thought.

Comparing ideas for the relations they bear to one another is thinking.

From this it appears that our thoughts hold

the relation of dependence on our ideas, and can never go beyond them, and that our ideas depend for their occasions on the relations which their objects, material and mental, bear to the mind.

The relation which the familiar idea of green color bears to the new idea occasioned by the presence to the mind of the green leaf is similar to the relation that all established well-known ideas bear to the new ideas with which they may become assimilated.

KNOWLEDGE.

Knowledge has already been defined to be a consciousness of the agreement or disagreement of ideas.

From the illustration given it appears that we must think for our knowledge, and that the mind must be supplied with ideas to be compared for their relations to one another.

ELEMENTARY KNOWLEDGE.

Our first knowledge of either material things or of states of mind is of simple existences, without reference to the causes that produced them or to the results they may produce. That which

is, or a simple existence, is a fact. Our first knowledge is of facts.

A knowledge of facts is elementary knowledge.

The young mind must be made familiar with elementary knowledge, that it may in the future comprehend general truth. The language of facts consists of names of things, and of descriptions of the phenomena of things that may be known by direct observation, or directly through consciousness.

SCIENTIFIC KNOWLEDGE.

A knowledge of facts relating to individual objects prepares the mind to generalize, or to think that what has been found true of the few individual objects observed is true of all objects of the same kind. By thinking the same thoughts of a multitude of objects we collect these into a class. We form a class, also, by thinking that many individual things have been produced by the same causes.

A knowledge of classes or of causes is scientific knowledge.

The language of scientific knowledge consists

of general propositions and of definitions. The relation that elementary holds to scientific knowledge is, the latter depends on the former.

INFORMATION.

We acquire knowledge of that which is presented to our minds. After knowing things in their kind by direct observation of them, we may then read from books or listen to oral statements affirming that objects of the same kind are found in places beyond the present reach of our senses. The objects described are not now the occasion of our thoughts, but a verbal description is substituted for them.

A state of mind occasioned by the employment of some form of descriptive language is information.

The relation that information bears to knowledge should be fully understood by both teacher and pupil; unless the learner has a knowledge of things in their kind he cannot be informed of those things.

The young pupil may be led out onto the real earth and learn objectively of geographical objects; he may then come back to the school-

room and read that there are objects of the same kind in countries situated beyond the reach of his observation.

If he reads before the observations are made, the words he uses will have no meaning to him.

The value of information communicated will depend on the accuracy and extent of knowledge previously acquired.

A description of objects in nature will inform the reader or hearer if the kind of objects described has been already observed and known.

A description of states of mind will inform those to whom it is made if they are conscious of having had similar states themselves.

It will be seen that the mind in receiving information is inquiring for ideas some other mind has invented, and may be satisfied if it has obtained them, although as a fact the ideas thus formed may be wholly different from those which their real objects would occasion.

The old grammars defined the subject of a verbal proposition or sentence to be that of which something is affirmed, and the predicate to be that part of the sentence used to affirm something of the subject.

The arithmetics taught that subtraction is the process of taking one number from another, and that multiplication is taking one number as many times as there are units in another number.

An analysis of a grammatical sentence itself, and of the actual processes of subtraction and multiplication, will lead both teacher and pupil to form very different ideas from those expressed by their usual definitions.

The subject of a sentence in grammar is always a word or words of which nothing is ever affirmed except in those instances in which the words themselves, as such, are the objects of thought.

If in subtraction we simply take one number of things from another number of things, the last-named number will always remain unbroken, and we can never multiply a number by taking it a number of times.

Language, in the ordinary acceptation of the term, is a system of signs, and the value of the information it communicates will be determined by comparing the information with our actual experiences.

The results of teaching and study by lectures

and by the use of books abstracted from the actual presence of the things described show that by such work the passive powers have been cultivated, to the neglect of the active.

As the right activity of passive power depends on the previous exercise of active power, it follows that the proper time for lectures and books on all subjects to be taught and studied is after the objective work by teacher and pupil has been thoroughly and methodically done.

If the laws that control the mind in the acquisition of knowledge have been correctly illustrated and defined, it is obvious that we need a radical change in the common modes of instruction employed in most of our institutions of learning.

METHOD.

In acquiring a knowledge of an organized thing, as a plant, we must first perceive the object as it is constituted, then by analysis turn attention to its parts, and to the relation the parts bear to one another, and to the whole of which they are parts.

As we can never know the parts of plant to

be parts until the whole is perceived, and as a knowledge of the relation the parts hold to one another must be derived from an observation of the parts as they are found related, we must have the whole plant in our presence from the first, as the object of our analysis.

After the analysis of the plant has been made, the parts that are now mentally unloosed from one another may be thought of as combined again into the whole in which they belong, by an act called synthesis.

The mind of the observer is now prepared for an intelligent use of the name plant, which represents to him all the ideas he has formed by the analysis and synthesis.

The occasion of the process just described was the presence to the mind of the object, plant.

The order of the process was, first, thinking of the object as a whole; second, thinking of its parts and their relations; third, thinking of the whole made of the combination of its parts.

The occasion and order of a mental process constitute its method.

The method illustrated is called the objective-analytic method. It is objective, as it requires

the object observed to be brought into the presence of the mind. It is analytic, as the analytic process is employed in obtaining a knowledge of the object.

The illustration given is limited to the application of method in the study of a material object and an individual whole. It may be shown that the same method should be employed in the study of all objects and subjects of knowledge.

Method will be more fully illustrated further on, when the learner is prepared, by what he has discovered of the laws of the mind and of thought, to better understand the subject in its relation to both elementary and scientific knowledge.

DEVELOPMENT.

The right exercise of the mind on appropriate objects of thought always produces an increased facility in the exercise.

The facility the mind acquires in the use of its power, by its use, is mental development.

The kind of development will depend on the kind of activity exerted, and the degree of it will depend on the intensity of the activity. The right development of mental power is the result

of its right use. Its right use is limited to the acquisition of useful knowledge, and to that form of activity implied in the employment of the method of thinking already defined.

Right thinking is the cause of a right exercise of the emotional nature and of the will, states of mind upon which the formation of character depends.

A right mental development is the end which all disciplinary school exercises should be adapted to secure. It will be seen that this must be secured, if it is secured at all, by a prolonged course of orderly mental activity, such as can be instituted only in schools for the young, provided with rational courses of study presented and pursued in accordance with a rational method.

PRINCIPLES.

That which originates or controls an existence may be called a principle.

The laws of the mind that control its activity in the acquisition of knowledge and information and in the development of power are principles.

The method illustrated is based on principles, or laws of the mind that require as conditions of

knowledge the presence of that which is to be known, for analysis and synthesis; that require elementary knowledge to be obtained before scientific knowledge is attempted, and that require self-activity as the cause of mental development.

REVIEW.

The following terms have been defined. The definitions will be a guide to their right use.

POWER.

Power is that which produces change. (*a*) Active power, or faculty, is power active in producing effects. (*b*) Passive power, or capacity, is power active in receiving effects.

PREDISPOSITION.

Predisposition is a native attribute of the mind that inclines it to think such thoughts as occasion one kind of emotions rather than another kind.

HABIT.

Habit is the facility the mind acquires in exercising its power in some accustomed way,

by continued exercise, accompanied with an inclination to act in that way.

LAW.

Law is that element of a force or of a power which determines a kind of existence or a kind of activity.

CONSCIOUSNESS.

Consciousness is that attribute of the mind which enables it to know of its own mental states, and of itself as the cause of them.

ATTENTION.

Attention is a modification of a state of mind caused by prolonging that state.

IDEA.

An idea is the immediate object of consciousness when we think.

THOUGHT.

A thought is an act of comparison of ideas.

KNOWLEDGE.

Knowledge is a consciousness of the agree-

ment or disagreement of our ideas. (*a*) Elementary knowledge is a knowledge of simple existences or of facts. (*b*) Scientific knowledge is a knowledge of classes or of causes.

INFORMATION.

Information is a state of mind occasioned by a description of things.

METHOD.

Method is the occasion and the order of a mental process.

DEVELOPMENT.

Mental development is the facility the mind acquires in the exercise of its power.

PRINCIPLE.

A principle is that which originates and controls an existence or an activity.

The laws of the mind that control it in the acquisition of knowledge and in the development of its faculties are principles upon which the method of teaching depends.

CHAPTER III.

INTELLECT.

THE mind considered to be a thinking power is called the intellect. Thinking has been defined to be an act of comparing ideas for their agreement or disagreement. The study of the mind as an intellect, therefore, must include a study of that mode of its activity by which ideas are formed, and by which their nature becomes the object of consciousness.

INTUITIVE OR REGULATIVE POWER.

Whenever an external object is brought into the presence of the mind, the mind is conscious of ideas. The presence of the object seems to be the occasion of the mental activity which produces the ideas, and the nervous organism of the body appears to be the medium through which the object is presented to the mind.

We must be conscious of ideas of physical

qualities and of mental attributes before we can think of matter or of mind. The power to form ideas makes thinking possible. The ideas we have limit our thinking, as we cannot think beyond our ideas nor contrary to them. For these reasons that form of activity which produces ideas is exercised by what may be properly termed the regulative power of the intellect. As simple ideas are sometimes called intuitive ideas, or intuitions, the power that forms them has received the name of intuitive power, also.

The terms "regulative" and "intuitive" in this connection may be applied to the same object of thought.

The mind itself is the cause of its own activity, but as it cannot think except some object or subject of thought is in its presence, to distinguish this necessary condition of thinking from the cause of it, the former has received the name occasion.

The distinction between cause and occasion is an important one, in their relation to the origin of our mental states, and should be made clear to the learner's mind.

The mind should be considered the sole cause

of its own states, while the presence of external things may be the occasion of these states, or one mental state may be the occasion of another mental state. Occasions are conditions necessary that a cause may produce an effect.

It is the office of the regulative power to form ideas corresponding to the occasions presented.

Some of the intuitive or regulative ideas and their occasions may be illustrated.

TIME.

If we move an object from one place to another place, we observe that a change has been effected in its relations. A consciousness of the idea of the change that has taken place in the object implies a consciousness of time that has passed away during the progress of the change.

Time is that condition of being considered as changing.

The idea of time is intuitive. The mind will form the idea of time whenever it observes changes in things, or is conscious of changes in its own activity. All modifications of ideas of time must be occasioned by corresponding modifications in the changes presented to the mind.

Children may be made familiar with ideas of time through concert exercises in singing, reading, counting, and gymnastic movements, or by observing the changes of place in the hands of a watch or clock.

Time is called an imperfect quantity, as it is not measured by a unit of its own kind. Time is measured by movements in space, and movement in space is measured by time occupied in its execution.

Intuitive idea.	Occasion.
Time.	Change.

SPACE.

If an extended body is presented to the mind, it will occasion ideas of the space it occupies, or of the space that contains the body.

Space is that condition of being considered as extended.

The idea of space, like that of time, is an intuition. The occasion of the idea in the mind is the presence of a material body for tangible extension, and colored surfaces for visual extension. A consciousness of the idea will occasion the mind to think form, size, and number of the

material things in its presence. Surfaces, lines, points are elements of the space which every body occupies, or which contains every body, and these elements should be taught by means of a body occupying the form of space of which the mind by its presence is to be made conscious.

A surface will then be perceived to be the space just on the outside of a body — a line to be the boundary of every plain surface, and a point to be at either end of every finite straight line.

The condition of necessity distinguishes a native product of the mind from one that is acquired by experience. The idea of space is an intuition, and the occasion of its existence is the presence of that which is extended in space.

Idea.	Occasion.
Space.	Body.

PERSONAL IDENTITY.

Whenever a human mind forms ideas, or perceives external objects, or reproduces past mental states, or exercises itself in any way, it is conscious not only of the exertion of mental power, but it is also conscious of itself, and of sameness in itself in every instance of its activity.

The idea of personal identity is the idea of personal sameness, and a necessary element in the consciousness of the exertion of mental power.

We may inquire for that which is always the same through all the changes we experience in either our minds, or our bodies, or in the world around us. Identity in an unorganized natural body requires it to be composed continuously of the same material in kind and amount, and to have all its elements continue to hold the same relations to one another.

Identity in an organized natural body, as a plant, requires that the phenomena it exhibits shall be the same in kind by which its individuality is retained.

Personal identity is not found in our physical bodies, as they are constantly changing by the processes that are constantly substituting new material for the old; nor in our mental states, as they are constantly producing new experiences, and suggesting through consciousness an increase or decrease of facility in the exercise of mental power.

We cannot then affirm sameness or identity of our bodies as permanently constituted of the same

materials, nor of our minds as never changing in the facility with which they exercise their power.

I, or that which is denominated the *ego*, is known by us through consciousness to be always the same in all the changes we experience in our minds, or our bodies, or in the external world to which we may hold a relation.

The idea of personal identity is an intuition. The occasion of the idea is a consciousness of a mental state.

The idea is an important one, as it compels us to believe that we, as persons, shall continue, though all organized material things change and disappear.

Idea.	Occasion.
Personal identity.	Mental states.

CAUSE AND EFFECT.

All things which appear to our minds as we turn our attention to the world without or within us we have called phenomena.

The mind is naturally led to inquire for that which has produced the phenomena it observes or of which it is conscious. The phenomena

then become effects, and that which produced them causes.

The ideas of cause and effect, and that every effect must have a cause, are intuitions.

The occasion of the existence of these ideas is the presence of phenomena.

The term "cause" is sometimes applied to whatever is considered to be necessary to the existence of an effect. Used in this sense, the material of which a thing is made is the material cause; the plan in accordance with which it is formed is the formal cause; the reason for producing it is the final cause, and the agent active in producing it is the efficient cause.

The efficient causes of effects are beings endowed with intelligence and will. Of these causes one must be the first cause, the others secondary causes, subordinate and dependent.

Effects are presented to us for study. It is by an analysis of effects that we are able to learn what we can know of the causes which produced them.

Physical effects must be analyzed for a knowledge of physical forces, and mental effects, or states of mind, for a knowledge of mental powers.

Effects are to be observed first as simple facts, or phenomena. The mind must know of the existence of things before it can have any occasion to turn its attention to an inquiry for their causes.

The relation that a knowledge of phenomena holds to a knowledge of their causes is the relation of elementary to scientific knowledge.

The ideas of cause and effect, and that every effect must have a cause, are intuitions; while a knowledge of the particular cause of any observed effect must be obtained by an analysis of actual phenomena presented.

Ideas.	Occasions.
Cause and effect.	Phenomena.

RIGHT AND WRONG.

Ideas of right and wrong, taken in a moral sense, are intuitions of which we are immediately conscious when we think of acts as moral acts.

We have found that our ideas of cause and effect are intuitions, which appear in the mind whenever phenomena, external or internal, are present, but that this does not imply a knowledge of the particular cause which has produced any particular effect observed; so we must make a

distinction, also, between our simple intuitions of right and wrong and our knowledge of any given act as a right and wrong act.

Ideas of right and wrong are native in every sound mind, but judgments differ widely with reference to the moral qualities of particular acts.

We are accustomed to call that act of a moral being right which is adapted to occasion an idea of right, though we know that the act itself can have no moral quality. Beyond this we may inquire for what must be true of the act to make it a proper occasion for the idea.

First. It must express a conscious obedience to authority.

Second. In connection with obedience it must be adapted to produce some good end.

Ideas of right and wrong accompanied with feelings of obligation make us subjects of moral law.

Ideas.	Occasions.
Right and wrong.	Moral acts.

Without describing other intuitions the subject may be completed by turning attention to the marks by which intuitions may be distinguished from all other states of mind.

First. They are the immediate objects of consciousness when we think.

If we think that the body A has form, we must be conscious of form itself as a condition of this thinking.

Second. They appear in the mind at once when the right occasions are presented.

As our thoughts are acts of comparison of ideas, the thoughts must be limited to the ideas the mind is able to form. It is the office, therefore, of the regulative power to establish the conditions and the limits of our thoughts as well as to determine their character.

A familiarity with simple ideas is necessary to an intelligent study of things or of the operations of the human mind.

The topics relating to intuitions may be arranged in the following order: —

Intuitions.	Occasions.
Time.	Change.
Space.	Matter.
Number.	Objects.
Personal identity.	Mental states.
Cause and effect.	Phenomena.

Right and wrong.	Moral acts.
Resemblance.	Objects of same kind.
Difference.	Objects of different kinds.
Existence.	Any object of thought.

The exercises of the kindergarten make the young children familiar with simple ideas. This familiarity, accompanied with the mental discipline acquired, will prepare them to think with facility of those things which will be presented for their observation when they take their places in the primary school.

The spirit of the kindergarten should prevail in all the grades of instruction known to our system of public schools. The processes of instruction should be so conducted as to associate ideas with the objects by which they were occasioned. This will lead the mind to perceive the element of reality in the knowledge of phenomena, and promote the harmonious development of the faculties.

Care should be taken in teaching and studying the intuitions to bring before the mind right occasions for the activity of its intuitive power.

CHAPTER IV.

THE ACQUISITIVE OR OBSERVING POWER.

THE mind is first conscious of its own states, but there seems to be implied in these states a consciousness that there is a corresponding external reality to which they hold a relation. This consciousness compels us to believe that there is an external world adapted to excite by its presence ideas of its phenomena, and that what we know of the phenomena is involved in the ideas thus excited.

SENSORIUM.

The nostrils, tongue, ears, hands, and eyes are organs, as they are adapted to special uses. These organs with the nerves attached leading to the brain constitute what is known as the sensorium. Considered individually, the organs of the sensorium are called the senses.

SENSATION.

A state of mind occasioned by the effect produced on the sensorium in contact with objects belonging to the external world is a sensation.

Sensations are sometimes called physical feelings, as they are excited by the effects produced on the organs of the body.

ACQUISITIVE OR OBSERVING POWER DEFINED.

If an object, as a mineral, is brought in contact with the nerves at the ends of the fingers, there will result a state of mind called sensation.

In this way the external object has been presented to the mind through the organs of the body.

If it happens to be the hardness of the object that is thus presented, the sensation will be of such a kind as is adapted to occasion an idea of hardness, and the mind will be conscious of this idea, and will be aware that there is something external to itself and in its presence. When this something is described it will be called a hard body, meaning that it is an external object and that it is adapted to occasion an idea of hardness.

That which is affirmed of objects will depend upon the ideas they excite. By such processes the mind acquires a knowledge of the phenomena of the external world.

The power whose activity consists in acquiring a knowledge of the phenomena of the external world through the senses is the acquisitive, or observing, or presentative power.

The mind as an acquisitive power produces the first knowledge of things of which we are conscious.

The activity of this power is possible only while external things are in its presence.

The law of the mind that controls it in the exercise of its observing power should be well understood by those who are attempting to teach the facts of material objects.

We next inquire for the province of the different senses and for the kind of knowledge derived through each.

SENSES.

1. *Smell.* If an object, as a rose, is brought into the presence of the mind by particles from the object falling upon organs situated in the

nostrils, a sensation will follow called the sensation of smell. The physical organ affected is the sense of smell.

The knowledge which the sensation of smell will excite the mind to produce is of the odor of bodies.

We may now classify odor with reference to its relations as a property of objects, or as a simple affection of the mind.

We are accustomed to say of odor that it belongs to some objects, and is therefore a property of these objects; but as some other bodies or objects have no odor, we conclude that odor is not a necessary property.

A property that is not necessary to the existence of bodies is classed as a secondary property.

Again, there is nothing in any body which by analysis the mind can set apart and before itself that it ever calls odor.

A consciousness of odor is that of an affection of the mind only, and for this reason odor is classed as a subjective property of matter.

A property of matter that leads the mind to be conscious of its own states only is a subjective quality.

The sense of smell, therefore, is not employed, as are the senses of sight and touch, in the early cultivation of the observing power.

Sense	Knowledge	Property
Smell.	Odor.	Secondary Subjective.

2. *Taste.* If a soluble body is placed on the tongue a sensation will follow called the sensation of taste, and the physical organ affected will be known as the sense of taste.

Through the sense of taste the mind derives a knowledge of savor. Savor, like odor, may be classed as a secondary and subjective quality of matter. The organs of smell and taste are placed near each other, and are thus able to be used in connection in obtaining a knowledge of the presence of objects that are agreeable and nutritious or that are offensive and injurious.

The young should be trained to good physical habits, by means of which the health of these organs may be promoted and preserved, and their legitimate service made possible.

The right use of the senses of smell and taste

occasion a large portion of our purely physical enjoyments. A perverted use will be likely to result in depraved appetites and ruined health.

Savors, like odors, are distinguished from one another by naming them in connection with the objects which occasion the sensations.

Sense	Knowledge	Property
Taste.	Savor.	Secondary Subjective.

3. *Hearing.* If one body comes in contact with another body so as to produce vibrations in the air, some of which vibrations fall upon a nerve situated in the ear, a sensation will be occasioned named the sensation of hearing. The physical organ affected is the sense of hearing.

"The medium through which the auditory nerve is affected is the atmospheric air. The effect produced upon the nerve is simply that of mechanical vibration, and this vibration is thought to be the occasion of a sensation that results in an idea of sound."

The sense of hearing is an important sense. The exercise of oral speech depends upon our

ability to hear. The loss of hearing cuts off an important means of expressing states of the mind and of receiving information. Tones of the human voice may be made signs of intelligence, of the kind and degree of the emotions felt, of the strength of the will, and an important means of communicating ideas.

The voice should be made the object of special cultivation in the schools. By training, it may be brought to a high degree of perfection as an instrument of expression.

Vocal music should be considered an important topic in every disciplinary course of study. It should be taught and practised for its refining influences; for the cheerful relief it may give to monotonous work; for the enthusiasm it may be adapted to excite, and for its power to move the will to choose the best ends by means of sounds adapted to give a natural expression to the intellectual feelings.

Exercises in oral reading and recitation should be conducted with special reference to training the mind to hear as well as to communicate. To this end the laws of mental activity and the physiology of the vocal organs should be studied

in connection and with reference to their relations to each other.

As sound cannot exist without there is some mind to hear it, it must be classed among the subjective properties.

Sense	Knowledge	Property
Hearing.	Sound.	Secondary Subjective.

4. *Touch.* Sensations of touch are occasioned by bringing an external object in contact with the skin, under which the nerves of feeling are distributed.

A complete network of nerves, covering the whole body, furnish us the media through which we know of the presence of material objects. The principal seat of the nerves through which definite sensations are occasioned is the inner surface of the hand and the ends of the fingers.

"The physiological structure of the palm of the hand and of the ends of the fingers render the nerves of these organs delicately sensitive to the presence of physical things, while the freedom of the movements of the fingers adapts

them to a close contact with such objects as they can hold in their grasp."

If an external material object is brought in contact with the sense of touch we become conscious, first, of resistance to our muscles, or of muscular resistance; secondly, we are made aware that there is something external to ourselves that occasions the resistance.

A consciousness of muscular resistance leads us to infer the existence of an external object possessing properties that adapt it to become a resisting existence.

What does a consciousness of muscular resistance imply?

If we attempt to separate one part of a body from the other parts we become conscious of resistance. That which holds the parts of the body in their places is called attraction.

An attempt to reduce a body to a smaller size will meet with resistance, due to the action of a force known as repulsion.

A body at rest offers resistance to an effort to put it in motion. If the body is in motion resistance is experienced in bringing it to a state of rest. The resisting force in the two cases is inertia.

It is through a consciousness of muscular resistance that the mind knows of

Attraction.
Repulsion.
Inertia.

These are forces active in the constitution of all forms of matter. If the attraction in the particles of a body is sufficient to hold them firmly in their places, it is a hard body. If the attraction is weak, so as to allow the particles to move freely among themselves, the body is a soft body.

A knowledge of attraction includes a knowledge of

Hardness and softness.
Roughness and smoothness.
Brittleness and toughness.
Elasticity and non-elasticity.
Heavy and light.

A knowledge of repulsion includes a knowledge of

Compressibility
and
Incompressibility.

A knowledge of inertia includes a knowledge of

Motion
and
Rest.

In classifying the properties of bodies known through the sense of touch we may consider hardness to be a type.

First. A consciousness of resistance, offered by a hard body, occasions the mind to direct attention to itself as resisted; with this view of the property, hardness will be classified as a subjective quality or property.

Second. The mind may turn to the object, and find in it the property that makes it a resisting body; with this view of hardness, it is an objective property.

Again, some bodies are hard, others are relatively soft. Hardness in its relation to softness is not necessary to the existence of a body, and is therefore a secondary property.

All bodies must have some degree of hardness; then, absolutely considered, hardness is a primary property.

What has been found true of hardness will be found true of all other properties known through the sense of touch, that is, they are all subjective and objective, secondary and primary properties.

The sense of touch may be considered a general sense, as every other sense is associated with it. Floating particles of matter touch the nostrils; the soluble body is in contact with the tongue; the vibrations of the air strike upon the organs in the ear; and the reflected rays of light fall upon the eye.

VITAL SENSE.

In close connection with the sense of touch, if not an element of it, is what is now called the vital or muscular sense. Through this sense the mind becomes conscious of the conditions of its own body, such as states of heat and cold, hunger and thirst, weariness and rest, health and disease.

The vital or muscular sensations seem to be blended with those experienced through the sense of touch, and to be especially adapted to furnish occasions for guarding the various physical organs from injury and disease.

The sense of touch, on account of its relation to the properties of objects belonging to the material world, is one of the first to be employed in the early objective study for elementary knowledge.

In deriving knowledge through this sense, tangible objects must be brought into actual contact with the physical organ, and the mind of the learner must be trained to judge of the properties of these objects from a consciousness of the ideas which their presence occasions.

Sense	Knowledge	Property
Touch.	Muscular resistance.	Secondary.
		Primary.
		Subjective.
		Objective.
Attraction.	Hardness.	
	Softness.	
	Roughness.	
	Smoothness.	
	Brittleness.	
	Toughness.	
	Elasticity.	
	Non-elasticity.	
	Heavy.	
	Light.	

Repulsion. { Compressibility. / Incompressibility.

Inertia. { Motion. / Rest.

5. *Sight.* If rays of light from a luminous body fall upon a material object and are reflected to the network of nerves in the eye, a sensation will follow called the sensation of sight, and the sense affected, the sense of sight.

The external conditions of the sensations of sight are supposed to be the modifications of the rays of light as they pass from an external object through the lenses of the eye and fall upon the optic nerve.

What do we know directly through the sense of sight, and what do we know to be necessarily implied in our direct knowledge?

All admit that we see color, and that a knowledge of color is the original and direct gift of sight. Whatever knowledge is implied in a knowledge of color must be derived, also, through the sense of sight. When we see color we see extension in two dimensions, at least, and colored extension

is necessary to the existence of color as an object of sight. Colored extension in length and breadth will present a surface.

If the surface is limited by boundaries it will represent form, size, and number.

Do we see solid form, or that form which represents extension, in three dimensions? This knowledge is referred by some philosophers exclusively to touch as the original sense through which it is derived; by others, to sight; and by still others, to both sight and touch.

In deciding this unsettled question for ourselves we may be guided in the attempt by comparing the occasions of seeing with the occasions of feeling. The occasions of vision are modifications of rays of light reflected to the eye from the colored surfaces of physical bodies. The occasions of feeling through touch are some forms of resistance offered to the muscles through the forces of attraction, repulsion, and inertia. From this it appears that as the occasions of sensations of sight differ radically from the occasions of sensations of touch, there must then be a corresponding difference in the sensa-

tions themselves and in the ideas resulting from the sensations.

The sensations of sight are adapted to ideas of colored extension in space and to form, while sensations of touch are fitted to ideas of hardness and softness, and of all those properties of bodies known through muscular resistance.

The rays of light reflected from the curved surface of a spherical body that may fall at once upon the eye cover surface sufficient to indicate the presence of a spherical form.

A cubical body may be so presented to sight that rays of light from three surfaces making a solid angle may enter the eye at once, indicating the presence of a cubical or solid form.

The surface of a body is the space in contact with the outside of the body, therefore the form of a body is an attribute of the space it occupies.

A cubical body may be seen to occupy a cubical portion of space by removing it from a closely fitting cubical box. The three dimensions of the solid form will be represented to sight by the inner colored surfaces of the box bounding the limited space.

The illustration thus presented will furnish

such suggestions to the teacher as will enable him to present right occasions for a true knowledge of empirical or observed forms as attributes of limited portions of space. Familiarity with such forms prepares the mind of the learner for an intelligent study of geometry, or for seeing and representing forms as they exist in nature or in the imagination.

Does a knowledge of color include a knowledge of distance? Although color is a subjective affection, yet the mind is so constituted that it always refers color directly and immediately to something external to itself, upon which the modified rays of light sent back from the eye fall.

If colored extension is an object of sight, then objects placed along on a surface extending from us will occasion ideas of distance; not of known or measured distance, but of distance and of relative distance. If the body is near the eye it appears larger, if removed it appears smaller. In the first case the color appears bright and the outlines distinct, but distance dims the color and obscures the outlines.

By these observations through sight we know

whether an object is approaching us or receding from us. If, in connection with these observations, we make actual measurements, experience will enable us to see things where they are, providing they are located along the surface on which we stand.

The measured distance of objects surrounded on all sides by unoccupied space, if they are far away, cannot be determined directly through sight.

The young of some animals seem to see distance as soon as their eyes are open. They go at once and in direct lines for their food, and they seize upon it with unerring certainty.

The young should be trained by object lessons to discriminate the colors from one another, to estimate the size and forms of space occupied by bodies that exist in it, and to judge of the distance of objects from some fixed point.

The organs of sight and touch are the first to be exercised in the intellectual training of the young. The two senses work well together, as we shall see further on under the topic, acquired perceptions.

Through touch we are made aware of the existence of the external world.

Through sight we are able to clothe external objects with color, form, size, and proportions.

Sense	Knowledge	Property
Sight.	Color.	
	Body as occupying space.	
	Body as contained by space.	
	To occupy space implies: —	
	Form,	
	Size,	
	Number,	
	Distance.	
	To be contained by space: —	
	Mobility,	
	Position.	
	Color.	Secondary and Subjective.

All other properties known through sight are: —

Primary and Objective.

A systematic course of object lessons should be conducted in the elementary schools, that have for their purpose the acquisition of accurate knowledge of the properties of external objects, and the training of the mind to interpret with facility the significance of the sensations and ideas occasioned by their presence.

To cultivate the mind to make an intelligent use of the sense of sight, lessons on form, color, size, number, and proportion should be given.

For training to use the sense of touch, lessons on the properties represented by tangible objects and known through muscular resistance should be conducted.

For hearing, lessons must be given to train the mind to use the ear in directing the voice to produce sounds that are adapted to inform, to please, and to move the will. This may be done in connection with conversation lessons, with oral reading, with recitation exercises, with singing, and with exercises especially prepared for vocal culture.

Lessons that are intended to exercise the mind by the use of the senses of taste and smell may

be given in connection with nature studies and with elementary chemistry.

SENSE PERCEPTION.

We have found that ideas may be occasioned by sensations, and that a consciousness of the ideas includes a consciousness of something external to our minds adapted to excite the ideas.

A state of mind which consists of a knowledge, derived through the senses, of the phenomena of objects belonging to the external world is sense perception.

The word "perception" means to take through; as the perceiving act seems to take external things into the mind through the senses.

When the presence of an external object occasions in our minds a sensation that results in an idea of hardness, a consciousness of the idea leads us to affirm hardness of that object.

This affirmation means that there is something external to our minds that is adapted to excite an idea of hardness.

What we perceive of external objects depends on the ideas they happen to excite as they are brought in contact with the organs of sense.

The accuracy of our knowledge will depend, therefore, on the validity of our ideas; and the validity of our ideas resulting from our sensations will depend, first, on the perfection of our organs of sense; second, on the relations the objects of knowledge are made to hold to these organs; third, on the ability we have to determine the significance of our ideas.

The first condition of true ideas should direct the attention of the teacher to providing the means of an intelligent and thorough physical training for his pupils. The second condition should lead him to a careful application of a philosophical method in all his teaching. The third condition should show him the necessity of providing those mental exercises for his pupils that will best promote the development of their minds as an observing power.

IMMEDIATE PERCEPTIONS.

The perceptions we have of the existence and states of our own bodies are immediate. Our bodies seem to be in the immediate presence of our minds and the direct objects of our perceptions.

MEDIATE PERCEPTIONS.

Our perceptions of material things external to our own bodies are mediate, as they are derived from the perceptions of the states of our bodies considered to be a medium between things external to them and our minds.

For instance, we know directly of the resistance made to our own muscular system, and through this knowledge as a medium we infer the existence of a resisting body external to our own.

The relation that our minds hold to our bodies enables us to compare the phenomena of one with the phenomena of the other, and to know that while our bodies are ours, they are not us; that while our minds can think, feel, and choose, our bodies have simply a passive existence in space; that while our minds are agents, our bodies are instruments for the agents to use.

A consciousness of this relation is important to us, as it establishes the conditions of our knowledge of the existence of the external world, and of the difference between a spiritual and a material existence.

ORIGINAL PERCEPTIONS.

We learn of the odor of bodies through the sense of smell, of savor through the sense of taste, of sound through the sense of hearing, of hardness through the sense of touch, and of color through the sense of sight. We obtain, at least, five kinds of knowledge through the senses, and in so far as knowledge is concerned, each kind must be obtained through its own appropriate sense.

Sense perception has been defined to be a knowledge of physical phenomena, derived through the senses. If the perception is immediate, and of a kind appropriate to the sense through which it is obtained, it is an original perception.

A perception of a colored object obtained through the sense of sight is an original perception.

ACQUIRED PERCEPTIONS.

When we infer the existence of hardness in a body, from a perception of its color, we are said to have an acquired perception. This perception is rather an inference, made of the ex-

istence of a property of an object, perceived originally through one sense, from the existence of a different property perceived through another sense.

Acquired perceptions are really not perceptions at all, but consist of inferences derived from experience and a reasoning process, as distinguished from immediate knowledge based on intuitive ideas.

It has been said that, in so far as knowledge is concerned, the phenomena of external objects can be known only by bringing them before the particular senses adapted to present them directly to the mind.

This truth cannot be too deeply impressed on the mind of the teacher.

In teaching for original knowledge he must not present the color of a mineral as the occasion of an original perception of its hardness, nor the weight of an object as the occasion of an original perception of its size.

If this suggestion is not regarded, the pupil will soon form the habit of allowing inferences to take the place of direct observation, and of accepting information as a substitute for knowledge.

It must not be forgotten that a collection of facts known through direct observation is the only scientific basis for a knowledge of causes, or of classes, or of general truth.

The ground of confidence in the validity of acquired perceptions is experience. We touch a piece of marble, and learn of its hardness. At the same time we learn of its hardness through the sense of touch we may learn of its color and luster through sight. When afterwards a piece of marble is presented to sight, we shall seem to see its hardness in its luster and color.

In the same way we seem to see weight, and heat, and cold, and all the qualities of matter known originally through the sense of touch.

We perceive the relative distance of objects from us by perceiving their apparent size, the nature of the surface on which the distant objects are placed, and by perceiving the appearance of their color and their outlines.

We may judge of the extent which one sense borrows from another by directing our attention to the fact that whenever we use the signs of things for the things themselves, as occasions

for perceptions, the perceptions thus formed are acquired.

The different forms of language we employ are signs of ideas and thoughts; but as an intelligent use of language as signs implies that the things signified are already known, it follows that language cannot be substituted for objects in the acquisition of new knowledge, and that original perceptions must exist before acquired perceptions are possible.

The senses, if fairly treated, will not deceive us. If we neglect to furnish them with proper objects to present to the mind for sensations and ideas, we may be compelled to take the products of the imagination for our facts.

This, however, is the result of the use of an unphilosophical method rather than of any defect in the perceiving power.

The child begins at a very early age to employ, as he finds it convenient or necessary, one sense to do the work that originally belonged to another sense. This exchange is begun so early in the life of every individual, and enters so largely into the work of early observation, that later in his experience he finds it difficult, in

many cases, to distinguish acquired from original perceptions.

CULTIVATION OF PERCEPTIVE POWER.

In preparing a plan for the cultivation of the perceptive or presentative power we must refer to the conditions and modes of its activity. From this knowledge we infer that the conditions are: first, the perfection of the senses as physical organs; second, the presence to the senses of external objects as occasions of sensations.

The modes of activity are such as produce, first, sensations; second, a consciousness of ideas resulting from the sensations; third, a knowledge of the existence of something external to the mind, adapted to occasion the ideas.

The ideas that suggest immediate perceptions of the existence of the external world are those occasioned by the sensations of sight and touch.

This leads us to infer that the senses of sight and touch are the first to be used in obtaining elementary knowledge of material objects, and in the development of the perceptive powers.

The sense of hearing may be used as a medium of communication of minds with one

another by means of oral language, through which social relations are cultivated and enjoyed.

The senses of taste and smell may be employed in detecting the character of the food we eat, and of the air we breathe, and the presence of the various chemical qualities or properties of bodies that occasion a knowledge of savor and odor.

The mode of activity exercised in cultivating the perceptive power is important, as it will determine the value of the knowledge acquired and of the mental habits formed.

That the perceptions may be original and true, the phenomena of objects perceived must each be placed before its appropriate sense.

Properties that can be seen must be presented to sight, and those that can be felt must be brought in contact with touch.

That right mental habits may be formed, and that facility in the exercise of the powers of observation may be acquired, the young learner must be required to derive his knowledge and his discipline by self-activity.

A complete knowledge of an external object

includes a knowledge of it, first, as an independent existence or whole; second, as made up of parts, if an organized thing, of elements if unorganized; third, as possessing attributes or properties belonging to the whole or to the parts; fourth, as adapted to certain uses arising from the nature of the attributes or properties; fifth, as holding a relation to ourselves, if fitted to satisfy a want.

If an external object is brought before the mind in this way, the conditions for the analytic method of study will be supplied, and a thorough knowledge of the individual may be obtained.

The first steps to be taken in the systematic development of the mind of the human child should be adapted to occasion him to form simple ideas, and to become familiar with them as their objects are presented to the senses. Although simple ideas are native to the mind, they never appear there until proper occasions are presented; then the mind becomes conscious of them, and associates them with those things that have been the means of their appearance.

It is the duty of the teacher to present objects whose properties are adapted to excite the ideas

of which he would have his pupil become conscious, and at the same time to teach him the proper signs with which these ideas are to be associated.

The cultivation of the faculty called language should be carried on in connection with every mental exercise which has for its object the acquisition of knowledge or the communication of knowledge already acquired.

The mind of the child passes by distinct degrees from forming ideas of things to the use of arbitrary signs of them. First, he will present the ball itself, or the plant, as representatives of his ideas of these objects; second, he may be led to turn away from the objects that have excited his ideas, to other objects like them, as his means of expression; third, he will be able to make for himself imitations of these objects from some constructive material, for signs of the ideas he has formed; fourth, he will see good representations of his ideas in pictures found in books, or drawn by himself; fifth, when the pupil has become familiar with associating his ideas with their natural signs, he is ready to use abitrary signs found in oral or written words.

Language is an important subject to be taught in the schools.

Language, considered to be a system of signs, is a necessary element in all our solitary mental acts, and in some of its forms is the only means to be employed in communicating our states of mind to other minds.

As our verbal language is composed of arbitrary signs, and as we may use these signs with a variety of meanings, we are always in danger of failing to express to other minds ideas just as they exist in our own consciousness.

Goethe says that "when we begin to speak we begin to err." The errors to which we are thus liable may be reduced in number by the use of right methods of teaching and learning a language.

Language should be associated with objects of knowledge. The presence of objects will occasion ideas and thoughts which are to be expressed with authorized forms of verbal language. These will consist, first, of oral words and sentences which are to be used until the pupil is familiar with them; then written or printed words may be introduced.

Facility in the use of oral and written language is acquired by practise. Abundant opportunity should be given to young pupils for speaking and writing.

ORDER OF OBSERVING.

After the pupil has acquired some facility in observing, and some accurate knowledge of individuals, and is able to describe his perceptions with correct forms of expression, he may be taught to analyze objects and subjects with reference not only to the qualities they may possess as individuals, but also with reference to what they may possess in common with one another.

In the secondary or high school into which the pupil will enter from the common grammar school the facts that were there obtained by observation and analysis will be arranged in classes, and referred to the causes that produced them.

If the elementary teacher is familiar with the relations that a knowledge of facts holds to the scientific knowledge to be pursued in the secondary school, he will know what facts to teach,

and the order in which they should be taught in the elementary school.

The pupil who has been trained to observe, and who has an orderly arrangement of facts at his command, will find himself prepared for scientific study.

A plan may be illustrated and its advantages shown in the elementary study of animals for the marks by means of which these objects are in the future scientific study to be arranged in their various divisions.

A fish and a skeleton of a fish may be selected for the first objects to be observed in the study of facts relating to animals. The attention of the learner should be directed to the living specimen for his ideas of the animal as it exists, then to the framework of a similar animal for a knowledge of its internal skeleton, having a back bone for its central part or axis.

The pupil may observe other animals whose bony structure corresponds to that of the fish he has just analyzed. Next a crab or lobster may be presented for observation. The internal skeleton is wanting, but the pupil observes that the animal is constructed in rings or segments, and

that the parts corresponding to a skeleton are external. Other animals whose plan of structure is like that of the lobster may then be examined. Thirdly, a snail, or oyster, or clam may be studied. The distinguishing marks by which these animals may be set apart from the fish and the lobster are found in their soft bodies. Lastly, if a starfish is analyzed it will be found to differ from all other animals that have been examined, by having its parts systematically arranged around a common center.

If we turn our minds back on what has been done in these simple elementary lessons on animals, it will appear, first, that the facts taught as the distinguishing marks of each kind of objects are few in number; second, that they are simple in their character, and are the objects of immediate perception; third, that they are the marks by means of which the animal kingdom may be divided into its great branches corresponding to its most comprehensive divisions. For these reasons the knowledge which the young student is required to obtain is adapted to his powers of comprehension, and it is the first to be used in the scientific study of animals.

The most extensive division of animals below the branches is into classes, the distinguishing marks of which are the next to be observed.

The elementary teacher looks forward again into the scientific course of study, and from his knowledge of the physical characteristics that form the basis of class distinctions he will determine what facts to teach next in his course of elementary instruction.

The same plan of objective lessons may be employed in teaching the facts which separate classes into orders, and so on until the species are reached and the preparation for classification is complete. With these ideas in mind the elementary teacher will be guided in constructing his courses of studies with reference to the topics to be introduced and to their arrangement in the course.

All branches of learning should be presented first in an elementary course of study, in accordance with the principles illustrated.

A true scientific course will suggest the elementary course and the order in which the various topics in the course should be arranged. In this way right occasions will be furnished

for the cultivation of the perceptive powers, and for the acquisition of an orderly knowledge of facts.

INTERNAL PERCEPTION, OR SELF-CONSCIOUSNESS.

The power of the mind to apprehend the phenomena of the external world has been called external or sense perception.

The power the mind has to know its own states is internal perception, or self-consciousness.

"The objects of sense perception are presented to us in space and time."

"The objects of internal perception are apprehended in self and time. The objects of one are the properties of matter. The objects of the other are the various activities of the mind.

"A perception of our mental states, in addition to the perception of the objects of these states, is called by some philosophers apperception."

Apperception is rather a consciousness of the agreement of present perceptions with some former perception — familiar and well understood; "so that every distinct perception is an

apperception," or "every thought involves both perception and apperception." From this it appears that the facts of the mind and of the external world must be apprehended in their relations to each other.

REVIEW.

Sensation.
Senses.
Knowledge derived through the senses.
Classification of properties of matter.
Object lessons adapted to knowledge and development through the senses.

Perception defined.
Conditions upon which accuracy of perceptions depend.

Immediate perceptions.
Mediate ,,

Original perceptions.
Acquired ,,

Cultivation of presentative power.

Internal perception,

or

Self-consciousness.

The province of internal perception.

CHAPTER V.

REPRESENTATIVE POWER.

We are conscious of producing mental states similar to those we have had before. As they are known to be similar, they are said to be reproduced states.

The power by whose activity our past mental states are reproduced is the representative power.

The term "reproduced" is here used to mean to produce again ideas similar to those that have been produced before. An existence that has ceased to exist can never, from the nature of the case, exist again.

Our ideas, therefore, are never reproduced in any other sense than that ideas recognized to be similar to those we had before may be produced again whenever similar occasions are again presented.

The exercise of the presentative or perceptive

power requires the presence of the objects of perception.

The office of the representative power is to produce mental states whose objects are absent.

We cannot be conscious of reproducing a state of mind unless we recognize it to be like a state we have had before. Recognition is an essential element in every act of reproduction.

The power that reproduces and recognizes past mental states is a representative power.

Our external and internal perceptions are occasioned by the presence of their proper objects. What are the occasions of the reproduction and recognition of past mental states?

An intelligent answer to this important question requires illustrations and plain statements of the facts as they are known through consciousness to exist in the association of ideas.

ASSOCIATION OF IDEAS.

An idea of the picture of a friend with whom we have been familiar will occasion the mind to form an idea which it recognizes to be like a previous idea of the friend himself. As this idea is recognized to be like a former idea of

the friend, it is said to be a reproduction of that idea.

It is in this sense that the term "reproduction" will be used in connection with the subject, "association of ideas," meaning that an idea is formed which is recognized to be similar to a former idea.

When one thing affects another in any way, they hold a relation to each other. The relation itself is the adaptation one has for the other, on account of which the effect is produced.

The result of the relation which the idea of the picture holds to the idea of the friend is, that the two ideas are made to keep company with each other. Such a relation is called the relation of association. If the objects associated are ideas we have the relation of association of ideas.

Association of ideas may be defined as the relation that one idea bears to another, on account of which one occasions the mind to reproduce the other.

WAYS OR LAWS OF ASSOCIATION OF IDEAS.

1. *Primary and objective laws.*

RESEMBLANCE.

In the illustration given the picture in a limited

sense resembled the friend, and by its resemblance occasioned an idea that the mind recognized to be similar to the idea before excited by the presence of the friend himself.

Our ideas, then, may be associated that are of objects which resemble each other.

The law that controls the mind in this act is known as the law of resemblance.

CONTRAST.

Virtue and vice, wealth and poverty, labor and rest, are related to each other by contrast. The presence of one of these contrasted objects will occasion the mind to reproduce an idea of the object with which it is contrasted.

Our ideas are associated if they are of objects that are related to each other by contrast, and the law governing the mind in this association is the law of contrast.

CAUSE AND EFFECT.

An author produces his writings, and is therefore the cause of them; the writings are produced, and they are then the effects. An idea of the cause of these effects will prepare the mind to

reproduce an idea of the effects; and an idea of the effects will lead to a reproduction of an idea of the cause. From this it follows that our ideas are associated if they are of objects which hold the relation of cause and effect.

The mental law controlling the mind in such acts is the law of cause and effect.

The ideas of cause and effect are inseparable. The existence of one implies the existence of the other, and for this reason the law of cause and effect is one of the most important laws of association.

WHOLE AND PART.

A plant is a complete existence in itself, and therefore a whole. The roots, stem, and leaves are parts of this whole.

An idea of a whole as a whole implies an idea of its parts as parts of the whole.

By means of this relation, ideas of a whole will occasion the mind to reproduce ideas of its parts, and ideas of parts will be associated with ideas of the whole of which they are parts.

The law controlling the mind in this association is the law of whole and part.

TIME AND PLACE.

The fourth of July is a time, the declaration of independence is an event; an idea of either of these objects will furnish the occasion for the mind to reproduce an idea of the other. By this act ideas are associated that are formed of a time and of an event that happened at that time.

The law controlling the mind in associating ideas of time and event may be called the law of time and event.

Bunker Hill is a place, the battle fought there is an event; an idea of either of these objects will prepare the mind to reproduce an idea of the other. In this case ideas are associated that are of a place and of an event which happened at that place.

The law governing the mind in associating ideas of place and event is the law of place and event.

If we compare a time with an event that occurred at the time, or our ideas of one with our ideas of the other, we shall find nothing in either objects or ideas from which a principle of association may be derived. We must then

seek for some external relation of the ideas of these objects which will furnish the mind with an occasion for associating them with each other. This we find in the fact that as the event and the time of it, and the event and place of it, had an outward coexistence, so did the ideas of them happen to coexist.

The two ideas having appeared in the mind once at the same time, whenever after one appeared, it served as a means of introducing the other.

As the ideas of time and event are related by the same circumstance as that found in place and event, the two laws may be considered one, called the law of time and place.

SIGN AND THING SIGNIFIED.

The words we use are the signs of our ideas, and when intelligently used they influence the mind to produce again the past mental states of which the words are the signs. Our verbal language, in so far as it is artificial, consists of arbitrary signs, whose significance we learn by experience. The ideas expressed are first excited by the presence of their objects; while

the mind is conscious of the ideas, words are associated with them.

The ideas and their signs having been made to exist together or in close connection, the presence of either of them will afterward tend to occasion the mind to reproduce the other, controlled by a law called the law of sign and thing signified.

In using signs as the occasions of the reproduction of ideas, it must not be forgotten that they cannot become signs before the things signified are already known.

The examples now presented illustrate the occasions that may be employed with reference to their relation to the association of ideas.

As the laws that have been defined control the mind in its acts of association of ideas, they are called primary laws; and as the mind acting under them directs its attention to relations found in the objects of the ideas associated, the laws are also called objective laws.

These are sometimes reduced to two, more general laws.

First. The law of coexistence represented by the laws of time and place, and of sign and thing signified.

Second. The law of affinity, under which are included the laws of resemblance, cause and effect, whole and part, and contrast.

A knowledge of the primary laws of association will direct the teacher and the student in arranging the different branches of learning in the courses of studies to be pursued, and also in arranging the subordinate topics into which each branch should be divided, so that the perceptions occasioned may hold some philosophical relation to one another.

The law of whole and part, if understood and observed, will direct the arrangement of topics of instruction so that both objects and subjects will be presented to the mind in a way adapted to the analytic method of study, by which the knowledge acquired will have a construction corresponding to the constitution of that which is analyzed.

A practical knowledge of the law of cause and effect will direct the construction of an elementary course of studies with reference to the scientific course for which the elementary course should be a preparation.

The elementary pupil observes effects as sim-

ple phenomena. The scientific student studies effects for a knowledge of the causes that produced them.

The law of cause and effect is an important law, arising from two considerations: First. From the importance of the ideas it occasions the mind to associate. Second. From the permanent and philosophical relation the ideas associated bear to each other.

A knowledge of causes is important, as it is of that kind which especially enables us to provide for our own well-being, and for the well-being of those to whom we hold relations. Such knowledge is important, as in its acquisition the mind is engaged in the highest form of intellectual activity of which it is capable; and consequently is producing for itself the highest form of intellectual development.

Ideas of causes as causes we have found to be inseparable from ideas of effects as effects; the relation, therefore, between them is a necessary and philosophical relation.

A knowledge of the process by which a sign is associated with the thing signified will prepare the teacher to present a course of language

lessons. It will prevent him from teaching words before he has made his pupil conscious of ideas to be expressed by them.

As the idea of a sign is related to the idea of the thing represented simply by the law of coexistence in time, the coexistence of the ideas must be repeated until experience has established a familiar and permanent relation between them.

This accounts for the fact that language can be acquired only by using it. A critical analysis of language requires a knowledge of the principles and rules of its construction, but facility and accuracy in its use require unlimited practise.

The mind has the ability to classify objects by associating its ideas of their resemblances and contrasts or differences, which may be discovered by analysis and comparison. Through such processes general notions are formed and the knowledge necessary to the right use of general abstract terms obtained.

2. *Secondary and subjective laws.*

If we refer to the example of the picture and

the object represented by it, we remember that the idea of either one of these objects was adapted to occasion the mind to reproduce an idea of the other, but what particular idea would be suggested we do not yet know.

Suppose the picture represents a person whose physical strength is so great as to excite vivid feelings of surprise in the mind of A (the observer) when he formed his first ideas of the person; then afterwards, when A, by the use of the primary laws of association, should reproduce ideas of the person, prominent among them would be ideas of his physical strength.

Again, suppose that some part of a discourse or some passage in a book excites our special interest as we hear or read; then, if afterward, by the use of some primary law of association, ideas of the discourse or of the book are revived, the first ideas to appear, and the most definite among them, will be those that interested us most when they were first perceived.

To determine what particular ideas will be reproduced by the use of the primary laws of association, we must refer to the states of mind

that are supposed to have existed when the ideas were formed that may afterwards be revived.

In these states of mind existing at the time ideas are first formed, that are afterwards to be reproduced, are found the secondary-subjective laws of association, as follows:—

1. *Vivid feelings.*

Ideas formed in connection with vivid feelings are readily reproduced.

2. *Frequency of repetition.*

Ideas many times revived finally become a permanent possession.

3. *Exclusiveness of association.*

If at the same time the mind is employed in forming ideas of an object some occasion occurs for other ideas not pertaining to that object, then these foreign ideas will be likely to be reproduced, to the possible exclusion of an idea of the true object of thought.

4. *Profesional habits.*

Professional habits produce an inclination in

the mind of the observer to direct his attention to those characteristics and qualities of objects that will occasion ideas relating to his profession. A mind acting in this way in forming its first ideas of things will be apt to reproduce most readily those that may be called professional.

These four secondary laws may be reduced to one law, called *attention*.

a. Vividness of feeling secures attention.

b. The more times ideas are reproduced the more attention is bestowed upon them.

c. The more exclusive the association the more attention is given to the ideas we wish to reproduce.

d. Professional habits prepare the mind to give special attention to professional ideas.

We may then derive the important truth that ideas formed under the influence of earnest and exclusive attention will be the most readily reproduced whenever proper occasions are presented.

A knowledge of the primary laws of association will direct the teacher in arranging his subjects of instruction.

A knowledge of the secondary laws will direct him to securing the individual attention of his pupils in all their school exercises.

REVIEW.

Primary laws of association.

Association defined.

Laws. Resemblance.

Contrast.

Cause and effect.

Whole and part.

Time and place.

Sign and thing signified.

Reduce to two laws.

1. Coexistence in time.
2. Affinity.

Secondary laws of association.

Vivid feelings at time knowledge is acquired.

Frequency of repetition.

Exclusiveness of association.

Professional habits.

Reduce to one law.

ATTENTION.

MEMORY.

We are conscious of reproducing states of mind, as ideas, thoughts, knowledge, feelings, and volitions, and of recognizing these states to be similar to mental states we have had before.

As these mental states are known to be similar to those we have had before, we call them reproduced states.

The mind active in reproducing and recognizing its past mental states is called memory.

An act of memory implies past existence, present existence, past mental states, reproduction and recognition of states similar to past mental states, and a consciousness of personal identity.

RELATION OF MEMORY TO ASSOCIATION OF IDEAS.

If the ideas we happen to have in mind at any time hold no relation to any other ideas, then an act of memory would be impossible.

We might form old ideas over again, if their objects were again presented to our minds, but ideas of the objects could not, of course, be the occasion of their reproduction, nor could we

recognize the ideas thus formed a second time to be similar to any former ideas.

From this it appears that the activity of memory depends primarily on the association of ideas.

This truth furnishes the reason for a careful study of the laws of association for a knowledge of the conditions of the activity of memory.

In a knowledge of the laws of association, we are made acquainted, first, with the conditions which must be observed that the reproduction and recognition of our past mental states may be possible; second, with the characteristics which distinguish one kind of memory from another; third, with the fact that the best means of cultivating the memory is to acquire our ideas with special reference to the laws by which they may be associated.

KINDS OF MEMORY.

1. *Philosophical Memory.*

The physical causes of the climate of a country are latitude, elevation above the sea level, slope of the lands, prevailing winds, ocean currents, relations to large bodies of water, nature of soil, etc. An idea of the causes of climate

will suggest an idea of climate as an effect on account of the philosophical relation that a cause holds to the effect it produces.

A memory that associates ideas by means of their philosophical relations is a philosophical memory.

CULTIVATION OF PHILOSOPHICAL MEMORY.

If we study the phenomena of matter or of mind for a knowledge of the relations wholes bear to their parts or to their attributes, for a knowledge of their resemblances and differences, and especially for a knowledge of the causes that produced the phenomena, we shall acquire our knowledge in a philosophical manner, and associate our ideas by their permanent relations. By such modes of activity we may cultivate the philosophical memory.

The ideas most surely and readily reproduced are those which are acquired while the mind is in the state called attention. This accounts in part for the fact that some minds remember dates and names with facility, others events, and still others verbal descriptions; memory may therefore be cultivated by exercising the power of

prolonging those states of mind which we desire to reproduce. Attention will be secured if, in acquiring knowledge, the mind is stimulated by a consciousness of the advantages that may be derived from its present acquisitions.

The amount of attention produced by the mind in thinking of its objects will depend upon the intensity of the attention and upon the length of time to which it may be prolonged. Both these elements of amount of attention may be increased by the repetition of any state of mind.

Frequent reviews of the lessons that have been learned furnish the conditions of repetition. It is by repetition that habits are formed and character established.

In the study of an organized object, as an egg, for example, we may turn our attention from the object as a whole to the parts in their order. We find the order of the parts to be the shell, the lining, the white, and the yolk. As this is the order of the parts in the natural object, it is called the natural order. These parts hold a relation to one another in space and in the effects each produces in completing the structure and function of the egg.

If the parts of this object are studied in their natural order the ideas obtained will be associated both by the law of coexistence in space and the law of cause and effect.

Arithmetic is a subject whose parts are number, combination, expression, and ratio of numbers. A thought of combination of numbers implies a thought of numbers; a thought of expression of numbers implies a thought of combination; and a thought of ratio implies a thought of number, combination, and expression of numbers. Each succeeding thought, as thus arranged, depends on the preceding thought.

An order of thoughts arranged with reference to their dependence on one another is a logical order. Thoughts arranged in a logical order will be associated by the law of affinity.

In the cultivation of memory the importance of acquiring knowledge in a philosophical manner, of frequent reviews, of securing attention in study, of arranging topics in a natural and logical order, will be seen by every teacher who understands the laws of the mind that control the reproduction and recognition of its past mental states.

CIRCUMSTANTIAL MEMORY.

If we analyze the idea of a fourth of July we shall not find the idea of a Declaration of Independence in it, nor can we find in the idea of Bunker Hill the idea of the battle once fought at that place. The relation that associates these ideas was established by their coexistence in the mind occasioned by the coexistence of their objects before the mind. Such a relation is a circumstantial relation.

A memory that reproduces past states of mind by means of their circumstantial relations is a circumstantial memory.

Philosophical is distinguished from circumstantial memory by reference to the kinds of association which relate their reproduced ideas to one another.

CULTIVATION OF CIRCUMSTANTIAL MEMORY.

Many ways have been invented for cultivating circumstantial memory. One of these ways may be illustrated by the following example: —

The great plague that once destroyed the lives of one hundred thousand of the inhabitants of London; the great fire that laid in ruins four

hundred streets of the city; the introduction of tea into the town from China; and the invention of the idea of insurance of property from loss by fire, all occurred about the year 1666.

This date can be remembered by observing that in the expression 1666 the figure 6 is used three times.

Columbus discovered America in 1492. This may be remembered by the use of the following couplet: —

> "In fourteen hundred ninety-two
> Columbus crossed the ocean blue."

In this example the time of an event is remembered not on account of the ideas of these objects holding any natural relation to each other, but because of their previous accidental coexistence in the mind, and of the peculiar form of expression with which they are associated.

In the meaningless word vib-gy-or may be found the initial letters of the names of the seven prismatic colors, arranged in the order in which they occur,— violet, indigo, blue, green, yellow, orange, red.

It will be seen that such methods as have been

illustrated do not apply to the cultivation of philosophical memory. By their use the time of an event may be remembered without any reference to the cause of it or to the results produced. So, also, the name of the place of an event may be remembered without knowing anything of the place itself or of the event that may have happened at that place.

The various schemes invented for cultivating circumstantial memory require the mind to turn its attention to accidental relations of ideas whose reproduction they are designed to occasion. They burden the memory by requiring it to retain a mass of material which is of no value in itself, and frequently of no value in what it occasions the mind to reproduce. It may be useful to know and remember the names of persons and things, the time, place, and order in which events have occurred, that their relations to causes and effects may be determined, but if the knowledge begins and ends with names, and times, and places, and orders, it is useless knowledge. Besides, the habit formed in the use of such methods will divert the mind from all philosophical study.

The knowledge reproduced by the activity of a circumstantial memory may be of value if it furnishes the necessary means of bringing before the mind data which will occasion analysis, generalization, and reasoning for causes and results.

As we depend upon the signs we associate with our ideas for the occasion of their reproduction by the exercise of memory, great care should be taken by the learner to employ such signs as good usage has appropriated to the ideas he wishes to express by them. Accuracy in the use of language is an important means of enabling the memory to retain possession of acquired knowledge.

IMAGINATION.

In the study of landscapes, an observer may find one whose hills please more than any other he has ever seen. As he continues his observation of landscapes, he may find another with beautiful valleys, and still another with beautiful streams of water.

The hills, valleys, and streams are parts of different wholes. The observer may reproduce and combine the thoughts of these parts so as to

form a thought of a new whole unlike any landscape he has ever observed.

The mental power whose activity combines thoughts of parts of different wholes so as to form a thought of a new whole unlike any ever observed is the imagination.

It will be seen that imagination uses the materials obtained through the activity of the observing power, and reproduced by memory.

The thoughts combined are reproductions. For this reason imagination is classed among the reproductive or representative powers; but as shown in the illustration, the thought of the new whole resulting from the combination of thoughts is not the product of observation: it is rather the result of an act of creative imagination.

KINDS OF IMAGINATION.

Some consider imagination to be of two kinds, called, respectively, philosophic and poetic imagination. If such a distinction is made, imagination, as defined, is poetic imagination, whose products are described by the use of figurative language, as will be illustrated further on.

If what is called philosophic imagination is

illustrated and defined and then compared with poetic imagination their peculiar characteristics will be better understood.

Suppose a piece of ice to be presented for examination. The first step in the process will be to observe it as a distinct existence or whole. This we will call the first observation. There will result from this first observation a consciousness of the existence of a piece of ice, which is a consciousness of the first fact obtained. A consciousness of this fact will occasion the mind to think that a piece of ice exists. This thought puts the mind in possession of the first truth resulting from the first observation and first fact, and the mind knows that ice exists.

Secondly. A thermometer may be applied to the ice and a second observation made, which will result in a consciousness of 32 degrees of temperature of the ice. The possession of this fact will occasion the mind to think that the ice has a temperature of 32 degrees. This thought furnishes the mind with a second truth, viz., that the ice has 32 degrees of temperature.

Thirdly. Applying heat to the ice, a third observation may be made, resulting in a con-

sciousness of a third fact and of a third truth; the application of heat for the fact, and that heat has been applied for the truth.

Fourthly. The liquid state of the substance may be the object of the fourth observation resulting in a fourth truth,— that the substance is in a liquid state.

Fifthly. The temperature of the liquid may be the object of the fifth observation, resulting in a fifth truth,— that the liquid has 32 degrees of temperature.

Five observations supposed to be made are now known to be adapted to occasion the mind to become conscious of five facts and five truths.

The truths are: —

1. Some ice exists.
2. It has a temperature of 32 degrees.
3. Heat has been applied to the ice.
4. The substance is in a liquid state.
5. The liquid has a temperature of 32 degrees.

The mind now has possession of five truths derived by its own direct observations. As it reflects upon these truths its attention is attracted to those relating to the temperature of the ice,

to the application of heat, and to the temperature of the liquid, and the question arises at once, what has become of the heat that was applied?

As the mind reflects upon the truths derived from its observations, a new truth appears, viz., the force which exhibited itself at one time in heat now exhibits itself in the changed form of the substance under observation, and in this way the heat has become concealed or latent.

The effect of the single truths upon the mind of the observer by the changes that have been described is found in the new truth it has occasioned.

That power of the mind which discovers new truth occasioned by the combined influences of other truths is called philosophic imagination.

We may now intelligently compare poetic with philosophic imagination and discover in what they resemble and in what they differ in their activities and in their products.

First. With reference to the materials used.

The materials of poetic imagination are thoughts of parts of different physical wholes; the materials of philosophical imagination are a collection of truths.

Second. An act of the former consists in combining thoughts of parts of different wholes so as to form a thought of a new whole, an act of the latter forms a new truth under the combined influences of other truths.

Third. The results produced by the former are thoughts of new wholes, by the latter they are new truths.

Fourth. The end to be accomplished by one is pleasure, by the other it is the acquisition of truth.

As the two acts of the mind differ in the materials used, in the form of activity exerted, in the results produced, and in the end sought, the powers that produce the activity should receive different names. Let poetic imagination be called imagination and philosophic imagination be called invention.

Imagination, then, is a power exercised by the poet, invention by the philosopher.

LANGUAGE OF THE IMAGINATION.

In the expression, "Virtue is like the sun, and all around drink life and light and beauty from its aspect," we have one object — virtue — represented to be like to another, the *sun*. In this ex-

pression is found an intentional deviation from the ordinary use of language, which constitutes a figure of language, called the simile.

If we analyze the simile we shall find it to be an expression of a thought formed by combining thoughts of the qualities of the sun with thoughts of the qualities of virtue. This process is an act of the imagination, and it is expressed in figurative language. Figurative language is the natural language of the imagination.

As the thought of the new whole formed by an act of the imagination differs from any thought directly occasioned by the presence of things external to the mind, imagination must have a creative power. On account of its creative power the imagination can produce ideal objects that are more pleasing than any real objects known through observation.

Invention discovers new truth whose objects are beyond the reach of observation.

Imagination creates its own objects from the material that observation has furnished.

CULTIVATION OF IMAGINATION.

As the materials used by the imagination are

obtained through the activity of the observing power and memory, we establish the conditions of cultivating the former by cultivating the latter.

The intelligent use of figurative language requires that exercise of the imagination which will result in its cultivation.

A person exhibits the state of his imagination in the character of the figurative language he is accustomed to use as he expresses his ideas of persons and things.

If the secondary objects of his figures are mean and vulgar, or such as improperly degrade the primary objects when associated with them, good evidence is furnished that his imagination has formed bad habits. Bad books have the same effect on the mind of the reader as do bad companions. They corrupt the conscience, they occasion impure thoughts that may dwell in the mind until they lead to impure acts.

Children exercise their imaginations in imitating the conduct of older people; in personifying inanimate objects, inferior animals, and the materials they use in their plays. The creative power is so active in the minds of some children

that the ideals they form stand in their judgments for real material or personal existences. When they describe these creations to others, their extravagant stories seem to show a reckless disregard for the truth, while at the same time there may be a perfect agreement between their statements and their thoughts.

Serious mistakes are sometimes made in the treatment of the young, from ignorance of the laws of the mind that control it in the exercise of its creative power.

The child should be taught to discriminate between the products of observation and the creations of the imagination, but from the earliest years of his school life his creative faculty should be encouraged in its exercise, and cultivated with as much care as that given to the cultivation of any other faculty.

The exercises of the kindergarten are especially well adapted to an early and healthy cultivation of the imagination.

Poetic imagination does not have poetry alone for its province, but also eloquence, music, painting, sculpture, architecture, and landscape gardening; while the province of philosophic

imagination, or rather invention, is investigation, the discovery of new truth, and instruction.

Written composition offers a good opportunity for acquiring facility in the use of the language of the imagination.

FANCY.

When the imagination performs its acts free from the control of the judgment and the will, its creations may have nothing in nature corresponding to them, "and wild fancies may be said to gambol unbridled through the brain."

The imagination uncontrolled in its exercise by the judgment and the will is fancy.

The products of fancy are expressed by the use of hyperboles in literature, and by exaggerated forms in art.

REVIEW.

Representative powers defined.

Association of ideas.

Laws of association.

1. Primary objective laws reduced to — affinity and coexistence in time.

2. Secondary subjective laws reduced to — attention.

MEMORY DEFINED.

Kinds of memory.
- Philosophical.
- Circumstantial.

CULTIVATION OF MEMORY.

1. Acquire knowledge in a philosophical manner.
2. Exercise attention.
3. Require frequent reviews.
4. ,, accurate use of language.
5. Acquire knowledge with reference to its use.

IMAGINATION DEFINED.

Poetic imagination.

Philosophic imagination = invention.

Cultivation of imagination.

Cultivate observing power.

,, memory.

Study and use figurative language.

,, works of art.

FANCY DEFINED.

A brief account has now been given of memory and imagination, called the representative powers.

Representative powers.	Memory.
	Imagination.

CHAPTER VI.

ELABORATIVE POWERS.

THE knowledge obtained through the activity of the presentative powers is of individual objects that have been presented to the mind.

Memory reproduces past mental states, and imagination modifies these states by making new combinations of them.

If the representative powers had no other states to reproduce than those produced by the presentative powers, then all reproduced states would be of individual objects also, and our language would consist of the use and construction of proper names.

On examination we find that our knowledge is of classes as well as of individuals, of causes as well as of phenomena, and that our language is composed largely not of concrete individual names, but of general abstract terms.

We next inquire how the mind passes from the

use of proper names to the use of general abstract terms, and from a knowledge of individuals to that of classes.

GENERAL ABSTRACT TERMS.

The word "term" means limit or boundary. A word in our verbal language is called a term if it limits or bounds that which is brought before the mind by its use.

For example, the word "color" is a term; it has a definite use to which it is limited, and by which its application is terminated. Color itself is a quality of an object; if thought of apart from any object to which it may belong, it is an abstract quality.

A term used as the name of an abstract quality is an abstract term.

The term "color" thus used is an abstract term. As color is a quality common to all colors, it is a general abstract quality, and the term "color" naming this general abstract quality is a general abstract term.

A general abstract term is the name of a general abstract quality of an object or attribute of a mental state.

By what process does the mind come to the use of general abstract terms?

Thinking of color, or any quality or attribute of any object of thought, to the exclusion of thoughts of other qualities, is an act of analysis.

Judging color or any quality to be a common quality is an act of generalization, therefore a knowledge of general abstract qualities is obtained by acts of analysis and generalization.

General abstract terms are obtained by an intelligent application of appropriate names to general abstract qualities known through the processes of analysis and generalization.

The young at first think of qualities in connection with the objects to which they belong. At this time they are to them concrete qualities.

It should not be forgotten by the teacher that although his young pupil may seem to employ abstract terms in a general abstract sense, nevertheless, he does not so employ them only so far as he has been through for himself the mental processes by which such terms must be obtained.

The first ideas of numbers must be formed in connection with things, as two apples and two apples are four apples; three marbles with three

marbles are six marbles. When the pupil can analyze the number two away from the other qualities of the apple, and the number three away from the other qualities of the marbles, and think of these numbers as common to any two or three things, then he can use two and three in their general abstract sense. So of all numbers.

He may now drop the name of the things, and use only the name of the numbers. Great care should be taken in elementary instruction to prepare the mind for the right use of general abstract terms. This is the preparation needed for all scientific study, which is wholly employed in the pursuit of general truth, and in defining it by the use of general terms.

CLASSIFICATION.

If a piece of quartz, which we will call A, is analyzed, it will be found to have a certain form, size, hardness, and luster, to be insoluble in acids, infusible before the blowpipe, and to crystallize in the form of six-sided prisms, terminated in six-sided pyramids. A second piece, B, may be analyzed in the same way, and its color, form, and size may be found to differ from those

of A, while it resembles A in its other properties. Other individual objects of the same kind may be analyzed and found to possess the qualities common to A and B. After analyzing many such objects the mind of the learner is prepared to think that the qualities observed to be common to the objects analyzed are common to all objects of the same kind.

By thinking these common qualities of all objects possessing them, the objects are collected into a division of things called a class. The name of the class is quartz — a name not of the individual pieces of quartz A, B, C, etc., but of the combined common qualities of them all.

The process of forming classes, then, consists, first, in analyzing individual objects for a knowledge of their properties; second, in making common to all objects of a kind qualities found by observation to be common to a few; third, in combining all objects, possessing the common qualities, into a division by affirming the same qualities of them all.

Classes are formed by
- Analysis.
- Generalization.
- Combination.

The knowledge gained by analysis of objects is elementary knowledge.

The knowledge acquired by generalization and combination is scientific knowledge. The relation that scientific knowledge bears to elementary is, the former depends, for its materials and its suggestions, on the latter.

It will be seen that by generalization the mind elaborates or enlarges the knowledge it acquires by direct observation, and thus passes, according to a much used and little understood expression, from the known to the unknown.

JUDGMENT.

If we analyze a piece of quartz we shall find it to be a hard mineral, and we may affirm hardness of it. By analysis we may find it to be insoluble in acids, and we may affirm of it insolubility. By analyzing many pieces of the same mineral we shall discover common qualities which we may affirm to be common to all individual objects of the kind.

That act of the mind which affirms one thing of another is judgment.

PARTICULAR JUDGMENTS.

The judgment which affirms that a part or a property of an individual object belongs to that object is a particular judgment.

GENERAL JUDGMENTS.

The judgment which affirms that a property is common to all objects of a kind is a general judgment.

DIRECT JUDGMENTS.

A judgment formed from a direct comparison of two objects with each other is a direct judgment.

INDIRECT JUDGMENTS.

A judgment of the relation two objects bear to each other from the relation they bear to a third object is an indirect judgment.

"The ball is round" is an expression made by the use and construction of the subject word "ball," with the predicate words "is round." The expression is, therefore, a verbal proposition, and is used to affirm roundness of the ball, or in expressing a judgment.

All judgments are expressed in propositions.

An idea of the roundness of the ball was obtained by analysis. Every intelligent judgment must be subsequent to an analysis, for an idea of that which is affirmed.

In affirming roundness of the ball, the mind by a synthetic act unites the property again with the object from which it was mentally taken. A complete mental process of thinking implies both analysis and synthesis, and the analytic process requires the former to precede the latter.

REASONING.

By direct comparison we acquire immediate knowledge. This is the distinguishing mark of all the knowledge we gain by those processes that lead up from a direct comparison of qualities which constitute individual objects of thought to a comparison of common qualities that constitute classes.

As far as classes are formed in the mind it is prepared to refer the individual objects of its thoughts to the classes in which they belong.

This act of referring individuals to their classes is necessary, that we may know them. The reference is made by indirect comparison,

which gives us mediate knowledge. We may illustrate these points by an example: —

Man is mortal,
A is a man,
Therefore A is mortal.

The expression "Man is mortal" is a general abstract proposition expressing a general judgment.

This proposition was obtained in a way already explained under the topic, "How do we form classes?"

The term, man, is the name of a class, and mortality is affirmed of every individual of the class.

The expression "A is a man" is a particular proposition affirming the result of a direct comparison —a particular judgment. This proposition was obtained by analyzing the individual A; by comparing the qualities found in him with those constituting the class man, and by affirming their agreement.

By this process the individual A is referred to the class man.

The third proposition, "A is mortal," was ob-

tained by the application of the necessary truth that two things which agree with a third must agree with each other.

Comparing man with mortality, and A with man, we are able to form a judgment of the relation A holds to mortality.

The process of forming a judgment of the relation two notions bear to each other from the relation the two bear to a third is reasoning.

In the form of reasoning thus described, the particular proposition, "A is mortal," is derived by analysis from the general proposition, "Man is mortal." This process has received the name of deductive reasoning, as it proceeds from a class whole to an individual whole.

In the process illustrated by the example: —

The magnets A, B, C attract iron,
A, B, C represent all magnets,
Therefore all magnets attract iron,

a general proposition seems to be derived from the analysis of a particular proposition.

To explain the principle upon which this process is founded, attention must be directed again

to the two kinds of wholes that may present themselves for analysis and comparison.

The notion of the class man is a notion of a combination of qualities belonging to every individual man in the class, that is a notion, of a whole that contains all men. For this reason man is an extensive whole. Every class whole is an extensive whole.

The individual A contains the common qualities that constitute the class, and other qualities peculiar to himself that constitute the individual. For this reason A is a comprehensive whole. Every individual of a class is a comprehensive whole.

From the constitution of a comprehensive or individual whole we see that every such whole contains all the qualities which make the extensive or class whole to which it belongs.

In the example: —

The magnets A, B, C attract iron,
A, B, C represent all magnets,
Therefore all magnets attract iron,

the first proposition was obtained by analyzing

the individuals A, B, C, and affirming that in each is found a cause that produces the same effect, that of attracting iron. The immediate knowledge obtained by the analysis was simply of the effect itself.

The inference that A, B, C are the causes that produced the effect is founded on the primary truths that every effect must have a cause, and that a cause is known by the effect it produces.

The second proposition, "A, B, C represent all magnets," is derived from the first by analyzing the individual wholes, each one of which must contain the same qualities that constitute the class whole.

The third proposition, "All magnets attract iron," is obtained by affirming that as a class of things considered to be a cause is the same as a cause found in each individual belonging to the class, therefore the same effect will be produced by the class as that found to be produced by any individual of the class.

It will then follow that all magnets attract iron.

The process of forming a judgment of a class from observations made on a number of individ-

uals of the class is called inductive reasoning, or, more properly, induction.

Induction is not a process from a part to a whole — an impossible process — but from an individual whole to a class whole, of which sameness of the two as causes is affirmed.

The principle applied in induction is the uniformity of causation, and the sameness in effects is the basis for affirming sameness in the causes that produce them.

It will be observed that the inductive process is the same as generalization and combination in classification.

By generalization the mind extends its knowledge from the few objects it has been able to observe to all belonging to the class. By reasoning the mind analyzes the class that has been formed, for a knowledge of the relations its individual members hold to the class. From the nature of these results the powers that generalize and reason are properly called the elaborative powers.

From the brief analysis of the elaborate powers now made some important truths may be derived by the teacher.

1. The elementary pupil must be prepared for the future exercise of these powers by the regular practise of analyzing for their common qualities those objects and subjects enumerated in the courses of study which can be brought literally before his mind.

2. In the study of natural objects, the teacher must be skilful in directing the pupil to observing those qualities, a knowledge of which will be used in the future classification of these into their branches, classes, orders, families, and species.

3. The observations should be so conducted that the phenomena of objects observed will be studied in the order indicated in the process of classification. If this plan is pursued, the young mind will be made conscious of the simplest forms of knowledge first in order, and all elementary knowledge will be arranged in an orderly manner, ready for use in the scientific courses that are to follow.

The elementary lessons in language should be taught not only with reference to its practical use, but so as to introduce the learner gradually to its grammar, its rhetoric, and to method in written composition.

Lessons in number should be so conducted as to prepare the pupil for comprehending the principles and rules of arithmetic, and, after the same method, all the branches of study taken up in the schools. Each should have its elementary course pursued with special reference to the scientific course that is to be based upon it.

DEFINITIONS.

Scientific definitions are the products of general judgments. This may be illustrated by an example taken from the definition of grammar.

Grammar is a knowledge of the right construction of verbal propositions. In this example that which is affirmed is a general judgment relating to all grammatical propositions. The learner can comprehend the meaning of the definition only as he is made familiar, by objective teaching and study, with the meaning of its significant terms.

These terms are: —

1. Verbal proposition.
2. Right construction of verbal propositions.
3. Knowledge.

The meaning of these terms may be illustrated by writing upon the blackboard an expression like the following: —

"Snow is white."

An analysis of this expression will resolve it into the subject word *snow* copula *is*, and the attribute word *white*.

A study for a knowledge of the use of each of these parts will prepare the learner for their definition, and for the definition of a verbal proposition which now may be derived.

A verbal proposition is an expression composed of subject, copula, and attribute.

By a further analysis it may be seen that the words of the proposition are written with their right forms and right arrangement. A proposition whose words are written or spoken with their right forms and right arrangement has a right construction.

The meaning of the term "knowledge" doubtless has been made familiar by elementary instruction in psychology.

If the pupil has been made conscious of the meaning of the terms thus taught he has a knowl-

edge of that named by the term "grammar," and is prepared for its definition. The definition will consist of a statement of a synthetic act combining that which has been set apart by analysis, as will be observed in the statement.

Grammar is a knowledge of the right construction of verbal propositions.

Another illustration of the method of introducing a subject in the scientific course of study may be given by showing how the first lesson in scientific arithmetic should be taught.

The first topic in this course should be: —

"Illustrate and define arithmetic."

Teaching the definition in the right way will bring the subject of arithmetic, as a whole, clearly before the mind.

An elementary course in numbers is supposed to have prepared the class in arithmetic for pursuing the subject as a science. Now the words they employ are to be changed from their concrete individual application to general abstract terms, and definitions are to be required of these terms.

To prepare the mind for a full comprehension of the definition of arithmetic, as of all subjects,

the significant terms used in the definition must be analyzed and defined also.

The definition, if rightly constructed, will present a full collection and orderly arrangement of all the distinct parts of the subject.

NUMBER.

As arithmetic has numbers for its object, the term "number" is the first to be defined. The teacher obtains the definition from the pupil by referring his mind to the first ideas formed in the elementary course in numbers, and by calling for an illustration.

The illustration is analyzed, and numbers are found to be a collection of units.

EXPRESSION OF NUMBERS.

The teacher then requires a number to be represented by the word *five*, by the letter V, and by the figure 5. From this illustration the definition of *expression of numbers* may be derived.

The expression of numbers is their representation by words, letters, or figures.

COMBINATION OF NUMBERS.

An illustration of the combination of numbers

may be made by increasing a number, as in addition or multiplication; by diminishing a number, as in subtraction or division. The derived definition will be: —

Combination of numbers consists in those operations by which they are increased or diminished.

RULE.

Next in order the meaning of the term "rule," in accordance with which combinations are to be made, must be taught, and the method of forming rules explained. This may be done by requiring an example in arithmetic to be performed. Let it be an example in the addition of numbers.

After the operation has been performed, require a statement of all the steps taken, observing the order. This will be a statement of the rule for performing all problems in addition of numbers.

All rules should be derived in this way. By an analysis of the operation in the addition of numbers the rule for the operation may be derived.

A rule is a prescribed mode of performing an act.

PRINCIPLE.

The attention of the class may be directed next to the reasoning processes employed in arithmetical exercises, by asking how it is known that ten units equal one ten, or that four with two equals three with three. The pupils will think for the answers to these questions until they will reply to the first by saying that a whole must be equal to the sum of all its parts; and to the second, that two things which are equal to the same thing must be equal to each other.

In this way all the axioms upon which arithmetical reasoning depends may be taught. The teacher may now lead the class to see that these axioms are the necessary truths which the mind must use in its reasoning processes in arithmetic.

These necessary truths are the principles of arithmetical reasoning.

The class engaged in the scientific study of arithmetic is now prepared for its definition, which will consist of the statement of an act

combining the single truths found by analysis relating: —

to	number
,,	expression
,,	combination
,,	rules
,,	principles

Arithmetic is a knowledge of the principles and rules for the combination and expression of numbers.

A class taught in this way will understand the subject of arithmetic in a scientific sense, and what is of the highest importance, the pupils will receive a training in reasoning that cannot be obtained in a better way through the pursuit of any other branch of learning.

An examination of the class will show that they have a full comprehension of all that which is expressed in the definition, and when they solve their problems they will be conscious of making a practical application of mathematical reasoning.

The mind is not ready for definitions until it has analyzed individual objects of thought, and

obtained a knowledge of facts sufficient to prepare it to generalize and combine them into general knowledge, and to comprehend the nature of such knowledge.

Definitions should be required at every step in the scientific course of instruction. If the elementary courses have been rightly presented, the pupil can enter the secondary school prepared to add to his knowledge of phenomena, through simple observation, a knowledge of classes and causes known through generalization and reasoning; and to his use of simple names and descriptions of individuals, the use of general abstract terms, and definitions in describing what is true of all things of a kind.

Some modern ideas of the value of arithmetic as a branch of study in the schools, and of the method of teaching as illustrated and advocated, fail to comprehend the subject as a science, or to teach little else than the mechanical application of rules to the solution of problems.

If that is all that the pursuit of a study can do for the mind of the student, then a course of exercises in it should end with the acquisition of a mechanical facility in business operations.

But if the pursuit of a study as a science trains the mind to reason, then it may be carried on as a mental exercise beyond its application to the problems that practical life will probably present for simply a mechanical solution.

The training of the elaborative powers is the special work of the secondary schools.

The best results from school exercises require, first, the use of a course of studies selected and arranged with reference to the value of different branches of knowledge, and to the relations one kind of knowledge bears to another. Second, the best results require the teaching of the course with constant reference to the laws of the mind that control it in the acquisition of knowledge—and the development of its power.

A plan of either public or private instruction which takes no notice of these things, but confines its attention to the introduction of various exercises without reference to their value, to their number, to their methods, or to their developing power, will quite likely be inadequate, inappropriate, and superficial, and will fail of preparing the children of the people in the best manner for their places in life.

TRUTH.

If we think that the tree A is fifty feet in height, and it is of that height, there is an agreement of our thoughts with their objects. Such an agreement is truth.

Truth is the agreement of our thoughts with their objects.

KINDS OF TRUTH.

Truth receives different names from the different relations its objects hold to our minds.

We may think that the tree is sixty feet in height, and say that it is so high. In this case there is an agreement of our thoughts with their statement. Such an agreement is moral truth.

If we say the tree is fifty feet in height and it is so high, although we think its height is sixty feet, there is an agreement between our statement and its object; such an agreement is a physical truth while it is a moral untruth.

The term "probable" means able to be proved. A truth can be proved if other truths can be presented that are more easily understood, and more readily believed, and which, if understood and believed, will compel belief in the truth to be proved.

For example, the truth to be proved may be the following: —

"The diamond is pure carbon."

The truth expressed in this proposition is proved by the simpler propositions, as follows: —

First. If the diamond be heated to redness, and then placed in a vial of oxygen, it will be totally consumed.

Second. The sole product of the combustion will be carbonic acid gas.

The truths expressed in the two propositions are derived from facts that may be presented to the senses. They are easily obtained, and are readily believed, and are such as compel belief in the truth to be proved.

A truth that can be proved is a probable truth.

The truth expressed by the proposition, "A whole is equal to the sum of all its parts," is of such a nature that a denial of it involves an absurdity. This may be illustrated by analyzing the proposition, "A whole is not equal to the sum of all its parts." An idea of a whole is an idea of a combination of all its parts. When the word "whole," the subject of the proposition, is brought before the mind it occasions an idea of

an objective whole to be formed. When the predicate, "Not equal to the sum of its parts," is presented, it occasions an idea that annihilates the idea occasioned by the subject. Such a proposition is an absurd proposition.

An absurd proposition is one whose subject expresses an idea that is annihilated by the idea affirmed by the predicate. The absurdity of the proposition consists in affirming an attribute of a thing that annihilates the thing itself.

A truth, the denial of which involves an absurdity, is a necessary truth.

The axioms which are the principles of mathematical reasoning are necessary truths.

The idea of existence is an intuition. My belief in the truth that I exist is founded directly on my intuitive idea of existence.

A truth based directly on an intuitive idea is a primary truth.

MARKS OF PRIMARY TRUTHS.

First. As primary truths depend on intuitions, they are not derived from other truths.

Second. As no other truths are more simple

or more readily believed, primary truths do not admit of proof.

Third. The truthfulness of primary truths is found in the nature of the truths themselves, therefore they are self-evident.

NAMES OF SOME PRIMARY TRUTHS.

a. Personal existence.
b. Existence of the material world.
c. Uniformity of the laws of nature.
d. Reliability of memory.
e. Personal freedom.

If we attempt to prove a primary truth our conclusions will be either obscure or false.

If we deny a necessary truth the denial will always involve an absurdity.

If these propositions were generally understood and believed, a large amount of verbal discussion now carried on would be omitted, and an equal amount of error now prevailing would cease to exist.

In reasoning the mind should examine with great care the truths upon which its premises are based, that it may form a proper estimate of its conclusions.

Reasoning that employs probable truth is called

Probable or Moral } Reasoning.

Reasoning that employs necessary truth is

Demonstrative or Mathematical } Reasoning.

HYPOTHESIS.

By observation it is found that the diamond has great refractive power. This is said to indicate its vegetable origin. It is found, also, that if the diamond is subjected to great heat, and then placed in a vessel containing oxygen, it will be consumed, leaving nothing but carbonic acid. This indicates that the diamond is composed of the same elements as those constituting mineral coal. But how is it possible for substances composed of precisely the same elements to exhibit such striking differences in some of their properties?

There is now in the presence of the mind unexplained phenomena, and the mind is uneasy,

and it studies for an explanation. To account for the different properties possessed by bodies composed of the same elements, combined in the same relative proportions, a supposition may be made as follows: —

The differences exhibited in the chemical and physical properties of bodies composed of the same elements combined in the same relative proportions are due to the different arrangement of their atoms.

A supposition made for the purpose of accounting for an unexplained phenomenon is an hypothesis.

Hypotheses may be allowed, first, if the phenomena to be explained are known to have an actual existence. We must know that Friday is an unlucky day, that the number thirteen is a fatal number, and that seeing the new moon for the first time over the left shoulder is an event of evil omen, before we can properly make hypotheses to account for such unexplained phenomena.

The high refractive power of the diamond, and the nature of the product after combustion proves it to be carbon. A comparison of the diamond

with substances possessing the same elements combined in the same relative proportions shows the actual existence of the unexplained phenomena.

Second. Hypotheses may be allowed if the phenomena have no other form of explanation.

There is no other way of accounting for different effects produced by the same causes than by supposing there is some difference in the conditions under which the causes produce their results. This supposition is made in the hypothesis relating to the diamond, and the coal by supposing that the atoms of one have a different arrangement from the atoms of the other.

THEORY.

The mind, after forming an hypothesis, studies for a philosophical explanation of what is supposed to be true.

With reference to the diamond and coal the explanation may be this: —

"When matter is passing from a liquid state slowly into a solid an incessant motion is observed, as if the molecules were minute magnets; they are seen to repel each other in one

direction and to attract each other and cohere in another, and in the end to become arranged into regular forms which, under equal circumstances, is always the same form for the same kind of matter, that is, crystals are formed.

"Time and freedom of motion for the particles of bodies to arrange themselves are necessary to the formation of crystals.

"If we force a fluid or a gas to become suddenly solid, leaving no time for its particles to arrange themselves and cohere in that direction in which the cohesive attraction is strongest, no crystals will be formed, but the resulting solid will have a different color, a different degree of hardness and cohesion, and will reflect light differently. Thus we have cinnabar as a red and also as a jet-black substance, glass as a milk-white opaque substance, so hard as to strike fire with steel, also as a colorless and transparent body."

Solid bodies, then, whether simple or compound, are capable of existing in two states, which are known as amorphous, without form, and crystalline.

"These dissimilar states and properties of the

same body are caused in the one case by a regular, in the other by an irregular arrangement of its atoms." The carbon of the coal is in an amorphous state, the carbon of the diamond is in a crystalline state. This accounts for the unexplained phenomena exhibited in their chemical and physical properties.

We have now explained the hypothesis relating to bodies of the same elements exhibiting different properties by accounting for the different arrangement of their atoms, and by showing that the different arrangement of the atoms in the bodies must be the cause of the difference in some of their properties.

An explanation of the way a supposed cause produces known phenomena is a philosophical explanation and a theory.

A theory is a philosophical explanation of an hypothesis.

Theory is sometimes contrasted with practise, and theoretical with practical. When used in these senses theory is considered to be a collection of abstract ideas, formed by those who have had no experience in their practical application; while practise is doing something

without reference to principles. In this sense, theoretical is a characteristic of that kind of knowledge which terminates in speculation, while practical denotes knowledge that can be used before it is obtained simply by applying rules, or by imitating what has been already done by others.

In their true sense theory is an explanation of principles by the application of which practise is guided in accomplishing its ends; and theoretical knowledge is the basis on which all true practical knowledge is founded.

Imitation in doing things without a knowledge of principles by which the doing should be directed cultivates the passive powers at the expense of the active, and binds the mind to the performance of unimproving labor.

The ability to make true suppositions of the causes that produce the phenomena that present themselves in our way through life, and to know the way causes act in producing their effects, is the foresight we need to guide us to a productive and progressive practise.

REVIEW.

Elaborative powers.

1. General abstract terms.
2. Classification.
3. Judgment. { General. / Particular. / { Immediate. / Mediate.
4. Reasoning. { Deductive. / Inductive. / { Probable. / Mathematical.
5. Truth. { Moral. / Physical. / Probable. / Necessary. / Primary.
6. Hypothesis.
7. Theory.

In the study of the mind as an intellect we have found that consciousness enables us to know of our present mental states; that the regulative power furnishes us with intuitions that make thinking possible; that by the activity of the ac-

quisitive powers we acquire perceptions of the phenomena of the external world and of our mental states; that memory and imagination represent our past mental states, and so preserve our knowledge for us; that analysis, generalization and reasoning, develop our ideas of individual objects into general truths relating to classes and causes.

We have learned something of the occasions that enable the mind as a cause to produce these various states, and of the relation mental activity holds to the cultivation of mental power.

A method of teaching, derived from a knowledge of the conditions of the different modes of intellectual activity, has been defined, and its application to presenting both objects and subjects for study has been illustrated.

Having considered the phenomena of thinking, we next turn our attention to the phenomena of feeling.

CHAPTER VII.

SENSIBILITY.

THE mind considered to be a power whose activity produces feelings is called the sensibility.

The activity of the mind as an intellect may be distinguished from its activity as a sensibility, first, through a consciousness that the activity of the latter depends on the activity of the former; second, through a consciousness that the intellect can place the phenomena of thinking before itself as objects of thought, while the sensibility cannot make itself hold objective relations to itself; third, through a consciousness that the activity of the mind as an intellect is under the control of the will, while the exercise of the sensibility is not subject to direct control.

The sensibility receives different names as the occasions of its activity differ.

PHYSICAL SENSIBILITY.

The sensibility excited to activity through physical organs called the senses is the physical sensibility.

The products of the activity are physical feelings, or sensations, which, in so far as they are objects of consciousness, are known as agreeable or disagreeable states of mind. These states are supposed to be common to all creatures possessing an animal nature.

INTELLECTUAL SENSIBILITY.

When the intellect has its own attributes as the objects of its thoughts, its activity will occasion the activity of the intellectual sensibility, whose products are intellectual feelings or emotions, known through consciousness as feelings of pleasure or of pain.

MORAL SENSIBILITY.

If the intellect is exercised in thinking of the moral quality of human conduct, it will occasion the activity of the moral sensibility, whose products are moral feelings or emotions, known

through consciousness as feelings of approval or disapproval.

The province of the intellectual sensibility is to feel pleasure or pain in view of that which is beautiful or deformed, as expressed in the works of nature or of art. When directed to such ends the sensibility is called taste, which may be defined as "that intellectual sensibility which feels pleasure or pain in view of the beautiful or the deformed."

Such feelings or emotions are called emotions of the beautiful, and the objects that possess the quality which occasions the emotions are called beautiful objects, and the quality itself is called beauty.

We may inquire, in what does this quality consist?

Physical things are of no importance to us except for the use we may make of them or for what they signify or express.

But beauty is not found in physical utility, or else all useful objects would be beautiful; nor is beauty found in things which serve simply as expressions of other things, for expressions are only the signs of that which occu-

pies our thoughts and produces our emotions. We must find what is the ultimate object of our thoughts that occasions emotions of the beautiful, and in that will be found beauty itself.

This object may be known by turning our attention to that which we are naturally inclined to think and say of the occasions of the emotions. We attribute calmness to the still waters of the sea; we speak of the pleasant morning light, and of the cheerful day; we say the rising sun rejoices as it awakens to new life all things that feel the effects of its genial beams; we personify nature, and think of matter as endowed with intelligence and the power of moving itself into regular forms, and of clothing the forms with harmonious colors; but it is the mind only that can be calm, and joyful, and intelligent.

Again, we criticize the works of art with our thoughts turned to the laws of the mind from which the principles of art are derived, and we are never satisfied with the works unless we find them to be adequate expressions of the principles.

If beauty is an attribute of the mind, it remains

for us to determine the nature of the attribute, and the occasions for our ideas of its existence.

Order, harmony, gracefulness, delicacy, and design are elements of beauty and attributes of the mind.

Ideas of order are occasioned by observing the constitution and construction of organized bodies; harmony is suggested in the agreement of our thoughts with their objects; gracefulness is illustrated in an easy position of the body, and in a moderate motion in curved lines; delicacy is expressed in refined manners and in objects possessing their qualities in a slight degree; design is manifested in the adaptation of means to ends. General intelligence, self-control, cheerfulness, the exercise of the generous affections, and a disposition to make the most of life are also elements of beauty, and attributes of the mind.

General intelligence is exhibited in the ability to acquire knowledge and in the wisdom that succeeds in directing it to the accomplishment of the best ends. Self-control is shown in good habits and consistent conduct. Cheerfulness is manifested in a predisposition that inclines the mind to think such thoughts as produce emo-

tions of pleasure. The generous affections are mental attributes seen in acts of self-sacrifice for the good of others. A disposition to make the most of life reveals itself in an earnest and persistent effort to know as much as possible, and in a determination to do what ought to be done.

Such is the character and province of the intellectual sensibility. Its products are emotions of pleasure or of pain. Its objects are always to be found in that of which we are thinking as we become conscious of the emotions. The occasions of its activity become known to us through experience.

MORAL SENSIBILITY.

The moral sensibility has for its objects the right and wrong of moral acts, and is called conscience, which may be defined as the moral sensibility that feels pleasure or pain in view of the right or wrong expressed in moral acts.

Such acts express obedience or disobedience to authority. Authority is the result of a union of wisdom, goodness, and power as attributes of a personal being.

A consciousness of the moral qualities of our acts, of our freedom in acting, and of our obligation to yield obedience to authority, makes us subjects of moral law.

Obedience is more than conformity to rules made by authority; it is no less than the submission of the will of one to the will of another because he has authority to require it.

Pupils in school should be faithfully instructed in their moral relations to the authority of teachers, parents, civil rulers, and of Him who has infinite authority.

Such instruction will lay the foundation of good citizenship.

EMOTIONS.

Simple feelings of pleasure or of pain excited by our thoughts are emotions.

The emotions are of two kinds: emotions of pleasure and of pain.

PREDISPOSITION.

Through self-consciousness and observation we are made aware of mental conditions that affect the character of the thoughts produced,

and so the character of the emotions which the thoughts excite.

These conditions seem to incline some minds to think such thoughts as will occasion feelings of pleasure, and incline other minds to form thoughts that excite emotions of pain.

Such conditions have been called predispositions. They seem to be native attributes of the emotional nature, and they serve to incline the mind to modify its judgments of the objects of its thoughts so that different emotions are felt by different minds in view of the same objects.

KINDS OF PREDISPOSITIONS.

The predisposition to thoughts that occasion emotions of pleasure is known as cheerfulness. The predisposition to thoughts that excite feelings of pain is melancholy. The states of body and mind favorable to the exercise of cheerfulness are good health, a clear conscience, a successful experience, a strong will, and faith in an overruling providence.

The states favorable to melancholy are physical weakness, ignorance of the causes that produce unfavorable results, disappointments, a

consciousness of mental and moral weakness, and a want of an intelligent faith.

The results of cheerfulness are agreeable states of mind, more accurate judgments, more influence over others, and a longer and happier life.

COMPLEX EMOTIONS.

Affections.

A thought of a friend will occasion a feeling of pleasure accompanied with an inclination to do good to the person towards whom the feeling is exercised.

A thought of an enemy will occasion a feeling of pain, and this feeling may be accompanied with an inclination to do harm to the person toward whom the feeling is directed.

A simple feeling of pleasure or of pain accompanied with an inclination to do good or harm to the person toward whom the feeling is exercised is an affection.

BENEVOLENT AFFECTION.

An affection consisting of a feeling of pleasure combined with an inclination to do good to a person is a benevolent affection.

MALEVOLENT AFFECTION.

An affection formed by exercising a feeling of pain together with an inclination to do harm to a person is a malevolent affection.

The affections are either

Benevolent
or
Malevolent.

Benevolent Affections. } Love of Country, Home, Friends, Benefactors, God.

The basis of the benevolent affections is love.

That which one is bound by moral obligation to do is duty.

The exercise of love towards its natural objects is a duty, and duty is the subject of moral education, which includes the cultivation of the virtues and the correction of the opposite vices.

Among the virtues are patriotism, or love of country; kindness; benevolence; diligence; obedience to parental authority, or love of home;

fidelity and trust, or love of truth and justice; gratitude and reverence, or love of friends and of God.

The means to be employed in moral education are precepts preceded by examples illustrating the precepts.

The young should have abundant exercise in the discharge of moral duties, that moral habits may be formed and moral power acquired.

Malevolent Affections. } Envy, Jealousy, Revenge.

The basis of the malevolent affections is hatred.

ENVY.

Suppose the pupil A stands at the head of his class in spelling, and that B stands next in order. A then occupies a desirable place which B might occupy if A did not prevent it.

For this reason B will have a tendency to exercise a malevolent affection towards A, and it will be exercised by one towards another who occupies a desirable place which the one might occupy if not prevented by the other.

If A receives a reward for his high rank in the class, he will possess a good which B might otherwise possess, and for this reason B will be inclined to exercise a malevolent affection towards A.

In both cases the malevolent affection exercised is envy.

Envy is that malevolent affection which is exercised by one toward another who occupies a place or possesses a desired good that the one might occupy or possess if not occupied or possessed by the other.

The exercise of envy implies a sense of inferiority either in ability to act or in the opportunity for acting, and is occasioned by a system of things in which one is led to compare himself with another more fortunate.

A plan of school government should be invented that will bestow rewards and inflict punishments so that such comparisons will not be possible. This may be accomplished by rewarding all, if any, who by their faithfulness deserve a reward. Under such a system of government each pupil will be led to compare what he has done with what he might have

done, and by the comparison will become conscious that his successes or failures are due to the character of his own efforts rather than to the relations he may chance to hold to some others. A comparison made by one of himself with himself will not be likely to excite envy.

Arbitrary rewards may be necessary to stimulate the young to activity in their first efforts, but as the reflective period of life comes on, a knowledge of the natural results of one's conduct should be sufficient to excite his emotions and to move his will.

JEALOUSY.

Suppose A loves B under such circumstances that he thinks he has a right to expect the love of B in return; but instead of loving A, as a fact, B loves C, and so deprives A of the love. For this reason A will have a tendency to exercise a malevolent affection, called jealousy.

Jealousy is the malevolent affection exercised by one person toward another whom he loves, but of whose love he expects to be deprived.

Jealousy implies that one may love the object he hates. The love is for one that is supposed

to possess lovable qualities. The hatred is exercised toward the same person on account of the state of mind which induces the loved one to reject the lover.

When jealousy exists in the mind the intensity of the hatred implied is generally in proportion to the intensity of the existing love.

A mind is relieved from jealousy in ordinary cases by introducing to its attention more worthy objects than those that are lost, or by rejoicing at the opportunity of making sacrifices for the welfare of others.

REVENGE.

If A injures B, there will spring up in the mind of B a malevolent affection which will incline him to inflict as much injury as he has received. Such a malevolent affection is revenge.

Revenge is the malevolent affection that inclines one to inflict as much injury as he has received.

PROVINCE OF THE MALEVOLENT AFFECTIONS.

A just act is rendering that which is due. Justice is a state of mind which inclines one to perform just acts.

First. The malevolent affections are properly exercised when the exercise is necessary to secure justice.

Second. When it is necessary for self-defense.

Third. When it is necessary for the defense of any person who deserves protection.

As love of that which is right implies a hatred of that which is wrong, the proper exercise of the benevolent implies the proper exercise of the malevolent affections. Both should be employed for the same ends.

Kind acts imply the exercise of wisdom. Such acts bestow rewards and inflict punishments, prompted in either case by both love and hatred. To inflict injury as an end is to violate the conscience, and to degrade the man even in his own estimation.

The teacher, by his methods of instruction, by his forms of government, and by his example, may direct his pupils to that use of their powers which will result in the ability and inclination to discover the truth, to feel the pleasure or pain which the truth is adapted to occasion, and to choose the best ends. Such a state of mind is education itself.

DESIRES.

If an object that can satisfy a want is brought into the presence of the mind a feeling of pleasure will be excited, and this feeling will be accompanied with an inclination to possess the object.

The presence of a disagreeable or dangerous object will occasion a feeling of pain, and the feeling will be accompanied with an inclination to be free from the object exciting the feeling.

A simple feeling of pleasure or of pain accompanied with an inclination to possess or reject the object exciting the feeling is a desire.

ANIMAL DESIRES OR APPETITES.

A desire for food arises from the wants of the body. Such a desire is called an appetite or animal desire.

As natural appetites exist without deliberation or an act of the will, they are instinctive and involuntary in their character.

The objects of the animal desires are food, exercise, rest, sex, air. Upon the right use of these objects depend the life and health of the body, and the free exercise of the mind.

The study of physiology and hygiene should be pursued by all pupils in all schools with special reference to the formation of good physical habits.

Temperance is a cardinal virtue. A knowledge of the laws of health and the power of self-control are necessary to its practise.

A desire for stimulants and narcotics is created by use. An artificial desire usually increases in strength by use, and sometimes becomes too strong to be controlled by the will. This is a characteristic of the voluntary appetites, and is an indication that they should not be cultivated nor indulged.

RATIONAL DESIRES.

The mind has a natural desire for knowledge. This desire arises from a want of the mind, and is called a rational desire.

The mind has a rational desire for knowledge, power, esteem, imitation, truth, liberty, property, continued existence, and society.

A desire for knowledge would not move the will to act unless there was an expectation of obtaining the knowledge desired. Knowledge,

and each of the other objects of the natural desires, is a good.

A desire for an expected good is *hope*.

Ignorance, poverty, and pain are evils. The mind has an aversion for these evils.

An aversion for an expected evil is fear.

The desires as principles of action may be resolved into hopes and fears. The affections as principles of action may be resolved into love and hatred. Upon these principles of action is founded the theory of rewards and punishments.

That which influences the will to choose is called a motive. The moving influences that affect the will are found in the simple and complex products of the sensibilities.

CULTIVATION OF THE SENSIBILITY.

To cultivate a power is to increase its facility and inclination for activity. As the activity of the intellect is the condition upon which the intelligent activity of the sensibility depends, the cultivation of the sensibility must depend on the cultivation of the intellect.

The teacher should make the mind as an intellect the direct object of culture, and the results

will appear not only in an increase of intellectual power, but in a corresponding increase in the strength of the emotional nature.

REVIEW.

Sensibility defined.
Physical sensibilities.
Intellectual ,,
Moral ,,
Emotions.
Kinds of emotions.
Pleasure.
Pain.
Complex emotions.
Affections.
Benevolent.
Malevolent.
Benevolent Affections. } Basis Love.
Malevolent Affections. } Basis Hatred.
Province of the malevolent affections.
Desires. Animal,
Rational.
Cultivation of the sensibility.

CHAPTER VIII.

WILL.

Food can satisfy a want of the body, knowledge can satisfy a want of the mind. That which is adapted to satisfy a want of the body or of the mind is a good. When a good is brought into the presence of the mind it excites feelings of pleasure. As the mind becomes conscious of the pleasure it is inclined to choose the good that is the occasion of the feeling.

As the mind becomes conscious of feelings of pain it is inclined to reject the harmful thing that excites the feeling.

The mind choosing is the will.

The order of all rational activity is, first, thinking; second, feeling; third, choosing.

The necessary conditions for the activity of the will are: —

First. There must be something to choose.

Without the activity of the intellect there would be nothing to choose.

Second. There must be some reason for choosing.

Without the activity of the sensibility there would be no reason for choosing.

Third. There must be the choice itself.

Something to choose, some reason for choosing, and the inherent power of choosing, are the conditions for the activity of the will.

In the simple and complex products of the activity of the sensibilities are found the influences that occasion the activity of the will. These influences are motives.

From what has been said, it appears that the desires and affections are motives.

The objects of the desires are things; the objects of the affections are persons.

Things and persons are external objects. For this reason motives found in the desires and affections are called external motives.

Without knowledge there would be no rational desires nor affections, and without these desires and affections there could be no rational choice.

In so far as rational choice is concerned the mind must act, first, as an intellect; second, as a sensibility; third, as a will. But as soon as

the mind enters upon the reflective period of its existence it becomes conscious of the power to modify the activity of the intellect and of the sensibility.

By an exercise of the will the intellect may be made to deliberate for new knowledge, which may occasion some modification of the previous simple and complex emotions. In this way new motives are brought into existence, and the will is moved to choose what it at first may have refused.

While the first movement is in the order indicated, there are reflex influences that seem to reverse the order. The activity of the will may affect the feelings, and the feelings may modify the thinking.

Motives produced by deliberation, as their objects are subjective, are called internal motives.

A consciousness of the power to deliberate before choosing an end is a consciousness of freedom.

The young are moved largely by external motives. While this is true, they have little self-control or feeling of responsibility. Their

hope of obtaining what they consider to be a personal good, and their fear of suffering a personal loss determine their conduct, and are the principal sources of their joys and sorrows.

As soon as the mind is conscious of possessing the power of self-control its moral relations are changed, or rather they begin to exist, and it becomes conscious of freedom and of responsibility.

School government should be so administered as to furnish opportunities and inducements for pupils to practise self-government.

Conformity is simply an outward compliance with rules of the governing power.

Obedience is the submission of the will to rightful authority. Obedience does not exist in the mind until the mind is conscious of the power to control itself.

MARKS OF A STRONG WILL.

The will is the controlling power. A mark of a strong will is found in its power of choosing the best ends.

The pupil who is always punctual in his attendance at school, who always has his lessons

thoroughly prepared at the appointed time, and who, without the stimulating influences of promised rewards or threatened punishments, always obeys the rules of the school, exhibits the products of a strong will.

Suffering in silence, speaking the truth when it exposes one to censure and to loss, and a virtuous, consistent life, are indications of a strong will.

The boy who is the acknowledged leader of his companions, the teacher who controls his school without a resort to visible rewards or tangible punishments, the parent whose simple requests have the force of positive commands, the military commander whose orders are promptly obeyed by his subordinates, and who, without regard to length of time or extent of space, carries out his plans against all opposition, gives evidence of being endowed with a strong will.

The marks from which we may infer the existence of a persistent will are found in the exhibition of the power to choose the best ends, in the punctual performance of the duties of life, suffering in silence, speaking the truth on

all occasions, in consistent conduct, in the ability to control others, and in an unyielding resistance to opposition.

FREEDOM OF THE WILL.

The marks of primary truths are: —

1. They depend on our intuitions.
2. They are more simple and more readily believed than other truths, therefore they do not admit of proof.
3. They are not derived from other truths.
4. They are self-evident.

That the will is free is a primary truth, and therefore does not admit of proof. All attempts that have ever been made to furnish logical proof that the will is free have failed to furnish any additional evidence to the truth as known directly through consciousness.

It remains, however, to determine what is meant by personal freedom. It has been found that in the natural, original order of activity the mind acts, first, as an intellect; second, as a

sensibility; third, as a will. Although these three modes of mental activity may be considered to coexist, yet their logical relation is as has been stated.

Although personal freedom is a primary truth of which we are conscious in every rational exercise of our faculties, still we need to be aware, as a practical matter, of what the freedom consists.

As conditions for an act of the will, there must always be two objects or subjects before the mind to occasion those moving influences, called motives, which require a choice to be made.

There must be some reason found in the motives for making a choice of one of the two things before the mind.

When the final reason is discovered the choice will surely follow.

Our personal freedom, then, seems to consist, first, in the power of choosing whenever the occasion of making a choice is presented.

The freedom to choose does not necessarily imply freedom in the choice.

The freedom in the choice consists in the power the mind has of deliberating before the choice is made.

By deliberation the reasons or motives for choosing may be changed, or new motives may be created, which may leave the will free to modify its choices; but after the final reason is found, all the rational freedom of which we can form a conception is implied in the certainty of the choice that will follow.

Our personal freedom, then, consists in the power that the will has of choosing one of the two objects that may happen to be brought before the mind, and in creating or modifying by deliberation the motives that in the end control the choice.

One of the great ends of education is to cultivate the habit of a rational and conscientious deliberation before choosing the ways of life.

MORAL HABITS.

In connection with the systematic development of the intellect, the spontaneous activity of the young child should be directed to acquiring good moral as well as intellectual habits.

Intelligent direction of those mental processes that have for their end moral education requires a practical knowledge of the principles of human action.

PRINCIPLES OF ACTION.

1. *Selfishness.*

At first the young are naturally inclined to choose that which appears to them to be an immediate good without reference to a greater remote good, or without regard to the good of others. This tendency has its origin in the principle of action known as selfishness.

Although selfishness is an original principle in the young mind, and is the source of that activity which has self-preservation and self-improvement for its natural objects, at first its application must be directed by experience and controlled by authority, that life and health may be preserved, and that the formation of good early habits may be made possible.

SELF-LOVE.

If the young are well taught and well governed, we have a right to expect that their learning and experience will supply them with motives for rejecting what they believe to be wrong, and for choosing what they believe to be right, and for their good on the whole.

The principle that leads one to choose that

which he believes to be for his good on the whole is self-love.

Self-love is a higher principle of action than selfishness, and may, when associated with wisdom and a strong will lead to the practise of every virtue. Such virtue, however, is not of the nobler kind that enlarges the mind and satisfies the conscience, nor is it the object of the highest admiration.

SENSE OF DUTY.

There is a higher principle of action than either selfishness or self-love. The teacher, even during that period of the child's life when his affections are occasioned largely by his immediate perceptions, should direct the child's attention to the obligation he may already feel to do right because it is right.

A sense of duty is the highest principle of human action. When the individual is controlled by this principle he will do no moral wrong. He may now be left to control himself, with no other interference than that which is necessary to train him to think so as to discover the truth.

Selfishness is that moral principle of activity which leads one to choose whatever appears to be an immediate good, without reference to a greater remote good or to the good of others.

Self-love is the principle of action that leads one to choose what he believes to be for his good on the whole.

A sense of duty is that principle which leads one to do right because it is right.

In the natural evolution of moral character the selfish principle of action at length becomes subordinate to the principle of self-love, and finally both selfishness and self-love become subordinate in their exercise to a sense of duty, the highest principle of human activity.

The best moral discipline for the minds of children at school is occasioned by cheerful, productive lessons conducted by a teacher who is able to illustrate, by his wisdom, goodness, and power, the attributes of a good intellectual and moral character.

THE END.

APPENDIX.

It has been the aim of this brief elementary work to introduce the learner to a study of the mind, and of a plan for its development by a course of easy lessons on mental phenomena as they present themselves directly to consciousness.

Care has been taken to avoid any special reference to conflicting theories concerning the nature and occasions of the various mental activities, or to different opinions concerning the true field of mental science.

This course has been taken, first, because true ideas of objects and subjects of knowledge can be obtained in no other way than by a direct study of these things as they exist in themselves; second, because the student is not prepared to judge of opinions until he first has some independent knowledge of the subjects to which they relate; third, because the examination of opinions without an intelligent standard by which

their value can be measured will confuse the learner and turn his mind aside from the real object of his investigation.

With a fair amount of elementary knowledge of his own mind by a direct study of its various states, the student may turn attention to the relations the organs of his body are observed to hold to these states, and guided by self-consciousness and self-observation, he may form an intelligent idea of these relations as furnishing the media and occasions of mental activity. He may now take up the study of physiology in connection with his psychology and learn something of the nervous system of the body employed as an instrument that the mind uses as occasions of its ideas of both itself and of the world external to itself.

This branch of knowledge is not physiological psychology, implying that a knowledge of the body is a knowledge of the mind, but it is simply a knowledge of the phenomena of the one in connection with a knowledge of the phenomena of the other, from which we may infer a relation between the two kinds of phenomena on account of their coexistence in time.

A study of the structure and function of the physical organs that are the special instruments of the mind will supply the learner with a knowledge of their right use and of the importance of preserving their health.

This knowledge will guide him in cultivating the powers of observation by directing his attention to the media through which their activity is occasioned.

The body is the object of two sciences: anatomy, or a knowledge of the parts of which the body is composed, and physiology, or a knowledge of the structure and function of the parts.

Anatomy and physiology should be pursued, at first, simply as physical sciences. That the knowledge acquired by the study may prepare the student to discover in the future the relation which the senses as physical organs hold to the mind, special attention must be directed to the brain, spinal cord, and the nerves, all of which, taken together, constitute the nervous system.

An elementary knowledge of the mind derived through consciousness, and of the body derived

through observation, will furnish the data from which some reliable inferences may be made concerning their relations to each other.

From a knowledge of the different modes of activity of which the mind is capable, and of the circumstances that are the natural occasions of the activity, may be derived the science of education and the art of instruction.

The ends to be accomplished by a disciplinary course of study must have primary reference to producing facility in forming ideas, in producing external and internal perceptions, in reproducing past mental states, in extending our knowledge of individual objects to all objects of the same kind, in feeling pleasure or pain, and in choosing that which appears to be a good.

The attainment of these ends will prepare the individual to enter upon those studies and exercises that will give him the knowledge and skill necessary to an intelligent care of himself, and to the right performance of the duties of domestic and public life.

School studies have two values. First, they furnish occasions for those exercises which result

in the cultivation of mental power. Second, they present occasions for directing the power in its practical applications.

The first step to be taken in a disciplinary course of instruction is to exercise the mind in forming and becoming familiar with simple ideas excited by the presence of their proper objects, and in directing a spontaneous activity to forming good intellectual and moral habits.

This is the peculiar work of the kindergarten where the regulative power is to be specially exercised, and the observing power is to be stimulated to its first orderly activity.

A familiarity with simple ideas of qualities and attributes, with a facility in expressing the ideas, will prepare the young mind to exercise itself in observing objects and subjects possessing the qualities and attributes. By this exercise the mind as an observing power may be cultivated, and an elementary knowledge of observable things may be obtained. These things are to be known at first as simple existences, without reference to causes or results.

The mind must know that which *is*, before it is prepared or has any occasion to inquire for a

principle of existence, or for the relation that one existence bears to another.

A knowledge of objects will furnish the mind, as it advances in its experiences, with materials for generalization and reasoning.

The mind, as it becomes a reflective power, will be able and inclined to add to its original perceptions of phenomena a knowledge of the relations and uses and causes of that which appears, including a knowledge of itself endowed with intelligence and freedom, the essential elements of the power of self-control.

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